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Volume XL APRIL 1932 Number 2

The Psychological Foundation of the Law of Demand *Umberto Ricci* 145

The Application of the Quantitative Method to Economic History (Clapham, An Economic History of Modern Britain) *Abbott Payson Usher* 186

The Unemployment Problem in Australia *E. Ronald Walker* 210

Early Industrial Preferred Stocks in the United States *George Heberton Evans, Jr.* 227

The Fondaco Dei Tedeschi: The Medium of Venetian-German Trade *J. Wesley Hoffmann* 244

Capital Production and Consumer-Taking—A Rejoinder *Ragnar Frisch* 253

Book Reviews 256
(See inside front cover)

Books Received 288

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BOOK REVIEWS

Rogers, *America Weighs Her Gold* (Spahr), 256.—Edie, *The Banks and Prosperity* (Spahr), 258.—Hayek, *Prices and Production* (*Preise und Produktion*) (Marget), 261.—Taussig, *Some Aspects of the Tariff Question* (Blakey), 266.—Roth, *Die Übererzeugung in der Welthandelsware Kaffee im Zeitraum von 1790–1929* (Fetter), 268.—Bossard and Dewhurst, *University Education for Business* (Lyon), 269.—Del Vecchio, *Grundlinien der Geldtheorie* (Marget), 272.—Wright, *The American Tariff and Oriental Trade* (Remer), 274.—Collins, *Rural Banking Reform* (Curtis), 277.—Mitchell, *Textile Unionism and the South* (Schwenning), 279.—Sokolnikov, *et al.*, *Soviet Policy in Public Finance* (Hoover), 281.—Spero and Harris, *The Black Worker* (Sapora), 282.—Monroe, *Value and Income* (Nelson), 285.

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THE JOURNAL OF
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THE PSYCHOLOGICAL FOUNDATION OF THE LAW OF DEMAND[1]

I. DEMAND CURVES AND UTILITY CURVES

1. The *demand curve* has been made so familiar to economists by Marshall that there is no point in discussing it at length. It is generally known that Cournot conceived of the notion of considering *demand* as a function of price, which would, for certain purposes, still be advantageous. Marshall inverted the axes and regarded *price* as a function of demand. Demand here means nothing other than the quantity sold, that is, in substance, the *supply* at a given price; and, therefore, Marshall's law of demand is, in reality, a law which tells us *the price at which a commodity may be sold*, as a function of *supply*. The physical quantity supplied is indicated on the horizontal axis, or axis of the abscissae, and the corresponding price *per unit* is indicated on the axis of the ordinates. It follows that the rectangle formed by the two co-ordinates of any point in the diagram indicates the value of the quantity sold at that price. Such a value has two names, according to the group of people by which it is being considered. It is outlay for the group of the buyers, and receipts for the group of the sellers.

2. Marshall's demand curve is a *static* curve: it presupposes that the conditions of the market which exist at a given moment are permanent. In this paper we will only consider static curves.

[1] Translated from the Italian by Henry Julian Wadleigh.

3. It is usually assumed that the Marshallian demand curve is negatively inclined. (And if this is the case with the Marshallian curve, it is so also with the curve of Cournot.) It is generally assumed that the utility curves are also negatively inclined.

"Utility curve" is an abbreviated term by which we mean the curve of marginal degrees of utility. On the axis of the abscissae we will indicate quantities of a commodity, precisely as in the demand curve, and with the same unit of measurement. On the axis of the ordinates, on the other hand, we will indicate the *final degree* of utility, in such a way that the *total utility* which a given person derives from the consumption of a given quantity of a commodity is the area inclosed by the two axes, the curve, and the ordinate of that given quantity. Therefore, if $U = U(a)$ represents the total utility function, $u = U'(a) = u(a)$ is the *final degree of utility*, while $dU(a) = u(a)da$ is the *marginal* utility. The letter a denotes the physical quantity of a certain commodity—let us say, the commodity (A).

The two following assumptions underlie the argument: (1) that the utility of a commodity (the pleasure experienced by the consumer of that commodity) is measurable; (2) that the utility of a commodity depends exclusively on that commodity. Both of these hypotheses have given rise to controversies which do not concern us here.

4. Utility curves can only be individual, whereas demand curves may be either individual or collective. The demand curve of a given person for milk shows how his consumption of milk, in a unit of time, will vary as the price of milk varies. The collective curve describes the variation of the consumption of milk in a unit of time on the part of all the individuals constituting a group. The collective curve is obtained by drawing all the individual curves along a common horizontal axis, and making an addition of the curves in the horizontal sense; that is, by computing against each ordinate (price) the sum of all the corresponding abscissae (individual demands).

It may readily be seen that, if all the individual demand curves are negatively inclined, the collective curve will also be negatively inclined, and, further, if the individual curves are con-

cave upward, that the collective curve will also be concave upward. More than this cannot be said.

In the preceding paragraphs we have referred to the collective demand curve; but now, since we intend to return to the utility curve, we must decompose the collective curve into individual curves and devote our attention to these.

5. If we assume, with Marshall, that the marginal utility of money is constant, every utility curve becomes an individual *demand curve* when we divide the ordinates by a fixed quantity, which is the marginal utility of money. The shape of the two curves may be said to be the same, and only the unit of measurement of the ordinates is changed.

An individual demand curve obtained in the manner now indicated may be called a Marshall individual demand curve. Therefore, we shall enunciate the following theorem: *if the utility curve is negatively inclined, also the Marshall individual demand curve is negatively inclined.*

But Marshall's theory is imperfect, and his premises are too simplified. Walras has pointed out that an individual, before deciding whether to buy a certain thing (A), makes a comparison of the utilities which he can obtain from a unit of money by spending it on that particular thing (A) or spending it in all the other possible ways. Therefore (1) not only the price of (A) but also the prices of all other objects of the desires of the individual must be considered; (2) the utility of the commodity (A) is to be taken into account together with the utilities of all other commodities, the utility of every commodity depending exclusively upon the quantity possessed or consumed of that single commodity, as was explained in § 3, and (3) we must further know the total amount of money which the individual can spend. The theoretical problem thereby becomes more complicated, as is well known, but its solution has the merit of approaching more closely to reality.

The theory of Walras has been termed the theory of the *general* equilibrium and Marshall's theory that of *particular* equilibria. Now, in the theory of the general equilibrium the individual as well as the collective demand for a commodity is a function of all

prices, and, inversely, any price is a function of all demands. There appears therefore to be no possibility of representing these functions of many variables by means of a plane diagram.

6. Given a function of n variables ($n>1$), we may imagine that $n-1$ variables remain constant at certain magnitudes arbitrarily chosen. Then we have simplified the original function, reducing it to a new function with a single variable, and the representation on a plane surface becomes possible. Therefore, a Walras curve of demand may be derived. A Walras curve of demand may then be rendered two-dimensional and constructed on a plane surface, if we assume that all the prices but the one of the commodity in question remain constant. Evidently it is also supposed that two other conditions, or sets of conditions, remain invariable:

a) All the needs of the individual, or his utility curves;

b) The income of the individual, or the quantity of money which he can spend in a unit of time.

Should some one of those conditions change, the form of the demand function will also change. Given a certain individual demand as a function of n prices, we know that to every system of hypotheses concerning $n-1$ prices there corresponds an arc of a *plane demand curve* of the commodity (A). We say "an arc" as a reminder that the hypothesis of caeteris paribus cannot honestly be assumed for more than moderate variations of price and individual demand.

Clearly, if we are able to draw arcs of demand curves corresponding to variations of price from p_1 to p_2 for one individual, and consequently for a number of individuals, we will, by adding them horizontally, obtain an arc of a plane curve which will indicate how collective demand varies as the price varies throughout the interval (p_1, p_2).

7. Let us call a *Walras plane curve of demand*, such a curve that gives the demand of a commodity (A) as a function of the price of the commodity (A) when all other prices (and *a fortiori* all other conditions) are constant. One could ask whether for such a curve a theorem analogous to that of the Marshall demand curve (§ 5) is valid. The new theorem would be as follows: *if the*

utility curve is negatively inclined, also the Walras individual plane curve of demand is negatively inclined. Walras has given an extremely simple and elegant demonstration of this theorem.[2] We have developed his mode of reasoning in a study devoted to the law of demand and consumer's rent.[3]

An analytical demonstration was furnished by Pareto;[4] a somewhat simplified demonstration was also furnished by ourselves.[5]

If we assume that the utility—or, as Pareto preferred to call it, the ophelimity—of a commodity depends also upon the quantity of other commodities, or, in other words, that the ophelimity itself is a function of *many* variables, the demonstration becomes much more complicated. A discussion of this case was also given by Pareto.[6]

II. THE ELASTICITY OF DEMAND CURVES AND OF UTILITY CURVES

8. Let us now proceed a step farther. We intend to prove that the relationship between *utility curves* and individual *demand curves* is closer than has so far been indicated, and is such that *their elasticity is of the same character.* In other words: If the utility curve is elastic, the demand curve derived from it will also be elastic; and, conversely, to an inelastic utility curve there corresponds an inelastic demand curve. An elastic curve, or, preferably, an elastic arc of a curve here signifies an arc of a curve which has an elasticity greater than unity in all its points.

The author has made the definition of elasticity given by Marshall more immediately comprehensible by modifying it into the following form: an arc of a demand curve is elastic when the corresponding arc of the outlay curve is positively inclined. By outlay curve is meant the curve which expresses outlay as a func-

[2] L. Walras, *Éléments d'économie politique pure* (4th ed.; 1900), p. 469.

[3] Ricci, "La loi de la demande individuelle et la rente de consommateur," *Revue d'économie politique*, January–February, 1926, and May–June, 1926, p. 944.

[4] Pareto, *Cours d'économie politique*, Vol. II, § 974 ff.

[5] Ricci, "Curve crescenti di ofelimità elementare e di domanda," *Giornale degli economisti*, August, 1904, § 11.

[6] Pareto, *Manuel d'économie politique*, "Appendice," § 52 ff.

tion of quantity consumed. Given the demand curve, the individual outlay is simply the rectangle formed by the co-ordinates of a point on that curve. Now if we represent the magnitude of this rectangle by means of an ordinate, we have the individual outlay curve. If by p we indicate the price of (A) and by x the corresponding demand, then $p=p(x)$ is the equation of the demand curve, and

$$s=xp(x)=s(x)$$

is the equation of the outlay curve.

Our definition does not differ from that of Marshall. According to Marshall the elasticity of demand is:

$$\eta=-\frac{p(x)}{xp'(x)}.$$

To say that the elasticity of a curve is greater than unity, or to say that $s(x)$ is positively inclined and that

$$s'(x)>0$$

are, therefore, both identical propositions. Similarly we describe an arc of a demand curve as *inelastic* when the corresponding arc of the outlay curve is negatively inclined, and as *anelastic* when the corresponding arc of the outlay curve is horizontal. An *anelastic point* is a point at which the tangent to the outlay curve is horizontal.[7] These definitions apply equally to individual and collective demand curves.

9. Using the outlay curve as a criterion, the author has proposed a classification of the fundamental forms of demand curve into five species which he has called *simple* or fundamental curves.

(1) Demand curves of the first species are those which are *elastic* throughout the whole of their length. In this case the outlay curve is *positively inclined*.

[7] A demonstration of this proposition is given in my article "Eine Klassifikation der Nachfragekurven," *Archiv für Sozialwissenschaft und Sozialpolitik*, 66 Band, I Heft. Compare also my article "*Courbes de la demande et courbes de la dépense*" in the *Revue d'Égypte contemporaire*, XXII (Cairo), 586.

(2) Demand curves of the second species are those that are *inelastic* throughout their length. The outlay curve in this case is *negatively inclined.*

(3) Demand curves of the third species are those which are *elastic* in a first segment and *inelastic* in a second. The outlay curve in this case is at first *positively* and then *negatively inclined.* The point of unit elasticity in the demand curve (anelastic point) is a point of *maximum outlay.*

(4) Demand curves of the fourth species are those which are *inelastic* in a first segment and *elastic* in a second. The outlay curve is here at first *negatively* and then *positively inclined.* The point of unit elasticity in the demand curve (anelastic point) is a point of *minimum outlay.*

(5) Demand curves of the fifth species are those which are *anelastic* throughout their whole length. Here the outlay curve is *horizontal.* Demand curves of this species cannot be anything other than equilateral hyperbolae.

Other curves are called by us complex curves. Such are, for instance, those curves which are elastic in a first arc, inelastic in a second, and elastic again in a third. We have called them curves of the sixth species. Those which are inelastic in a first arc, elastic in a second, and again inelastic in a third we have called curves of the seventh species. Here we shall confine ourselves to simple curves.

10. The same concepts may be applied to utility curves. By the term *utility rectangle* will be meant the rectangle which has as its base a quantity a of a commodity (A), and as its altitude the final degree of utility u of that quantity. Given the utility curve

$$u=u(a)\,,$$

the utility rectangle is

$$v=au(a)\,,$$

and evidently v is itself a function of a,

$$v=v(a)\,.$$

The elasticity of the curve is

$$\epsilon = -\frac{u(a)}{au'(a)} .$$

Now an arc of a utility curve is elastic, inelastic, or anelastic according as its utility rectangle is an increasing, decreasing, or constant function of the quantity consumed.[8]

11. We may also make a classification of utility curves similar to that of demand curves. Thus we will speak of a curve of the first species meaning a curve of which the utility rectangle is an increasing function, or a curve which is *elastic;* a curve of the second species will be a curve the utility rectangle of which is a decreasing function, that is to say, an *inelastic* curve; a curve of the third species will be one the utility rectangle of which is at first an increasing and then a decreasing function, in other words an *elastic-inelastic* curve, etc.

12. Now the aim of the present paper is to prove that elastic utility curves, or curves of the first species, give rise to elastic demand curves, and so on. In other words, we maintain that *every utility curve gives rise to a demand curve of the same species,* or homogeneous to it.

13. If we assume, with Marshall, that we may pass from the utility curve to the individual demand curve by multiplying the ordinates of the first by a constant coefficient, it is obvious that

[8] As every one knows, there is a fundamental difference between the demand curve $p = p(x)$ and the curve of final degree of utility $u = u(a)$. The total receipts or total outlay are represented by rectangle $xp(x) = s$, while the total utility is the integral:

$$U = \int_0^x u(a)da .$$

The difference would disappear only if a monopolist were able to vary the price, according to the capacity to pay of the consumers, in such a manner as to absorb what Marshall called the consumer's rent. This is evidently an extreme and only theoretically conceivable application of the policy of discriminating prices (cf. Ricci, "Elasticità dei bisogni, della domanda e dell'offerta," *Giornale degli economisti,* August and October, 1924, § 14).

the curve of elasticity is the same for a utility curve as for the corresponding demand curve. If

$$p(x)=ku(x)\,,$$

it follows that:

$$p'(x)=ku'(x)$$

therefore:

$$\frac{p(x)}{p'(x)}=\frac{u(x)}{u'(x)}$$

and finally

$$\eta=\epsilon\,.$$

Our theorem on the homogeneity of elasticity as between utility curves and individual demand curves is proved *a fortiori*.

In the Walrasian system we cannot pretend to reach a complete identity between the two elasticities; but even for that system we may prove our theorem on the homogeneity of elasticity.

III. THE WALRAS TRANSFORMATIONS

14. We begin, then, by separating the commodity (A) whose demand we wish to study from all the other commodities. If we know the utility curves of all other commodities for an individual, we calculate their respective transformed curves, using their respective prices, and we then add all of these transformed curves in a horizontal sense: we will thus obtain a utility curve of money, which may be spent on all or any of these other commodities.

Given the utility curve YX (Fig. 1), and given the price p, the transformed curve for which the price p is used is simply a new curve which has for its abscissae the abscissae of the utility curve multiplied by p and for its ordinates those of the utility curve divided by the same p.

If $u=u(a)$ is the equation of the curve YX, the curve transformed by means of the price p is:

$$t=\frac{1}{p}u\left(\frac{a}{p}\right).$$

Thus, for instance, supposing that $p = 2$, the transformation of the curve YX (Fig. 1) is $y'x'$. Every point S of the old curve gives rise to a point S' on the new one, the abscissa of which is double, and the ordinate half, that of the point S.

What is the economic meaning of the new curve? It expresses the utility of money which is spent in buying commodity (A). In order to satiate the need we require a quantity of money, $\overline{OX'}$, double the quantity of commodity which is required to satisfy

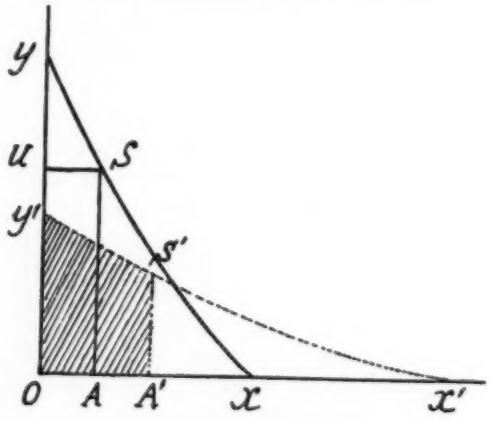

FIG. 1

the need. This is obvious, since the price is: two units of money for every unit of the commodity. In order to purchase the quantity $\overline{OA}$ of the commodity there is required a quantity of money $\overline{OA'}$ which is double $\overline{OA}$; and the utility $\overline{S'A'}$ of the last unit of money is half that of the utility $\overline{SA}$ of the last unit of the commodity, which is bought with the last unit of money. The total utility of the money $\overline{OA'}$ spent in purchasing the commodity (A) is the shaded area in Figure 1. It is exactly equal to the total utility of $\overline{OA}$, which is represented by the area $YOAS$.

15. This transformation having been accomplished for all the utility curves of commodities consumed by the individual, with the exception of commodity (A), we add the transformed curves

horizontally. We will thus have a utility curve of money spent on all commodities with the exception of (A).

With this curve we now compare the utility curve of (A), which is also his own transformed curve, on the assumption that a unit of the commodity is exchangeable for exactly one unit of money $(p=1)$.

Having reached this point we have greatly simplified the problem. We now have only *two* curves to compare with each other. One of these we will keep fixed, and that is the one referring to the utility of money in general. We will cause the other one, which refers to the utility of (A), to change in accordance with changes in price.

16. In the meantime, if we assume that the price of (A) existing at the time when our calculations begin is *unity* (and, for that, it is sufficient to take as our unit of measurement of the commodity (A) the amount which may be purchased with a unit of money), we may then determine the demand for A as soon as we know the income of the individual. To do this it is sufficient to place the two curves side by side so that the two have a common axis for their abscissae, and to cause a horizontal straight line to move up and down over them. This line will, in each of its positions, have two segments formed by its intersections with each of the curves and the corresponding vertical axis. As the line moves downward, the sum of these two segments will increase. When this sum is exactly equal to the income of the individual the two segments will represent respectively (1) his outlay on (A) and (2) his total *residual outlay*, that is, his expenditure on all other commodities. For sake of simplicity we may suppose that there are no savings.

17. Figure 2 will make the problem easier to understand.

The purpose of the procedure is to divide the income of the individual into two portions, one, s, the expenditure on (A), and the other, m, the expenditure on all things other than (A). We already know that the consumer will be in a position of equilibrium (having no ground for changing the distribution of his expenditure) when the marginal utility of money, s, spent on (A)

is equal to the marginal utility of money, m, spent in every other way: $u(s)=\varphi(m)$. We have been able to write $u(s)$ instead of $u(x)$ just because, p being equal to 1 by hypothesis, it follows that $s=px=x$. *The number indicating the outlay on* (A) *indicates also the demand for* (A) *at a price equal to unity.* The curve YX shows the final degree of utility of money spent on the commodity (A), and the curve ZM the final degree of utility of money spent on commodities other than (A). If US and VM are on the same horizontal line (assuming that the two axes of the abscissae are

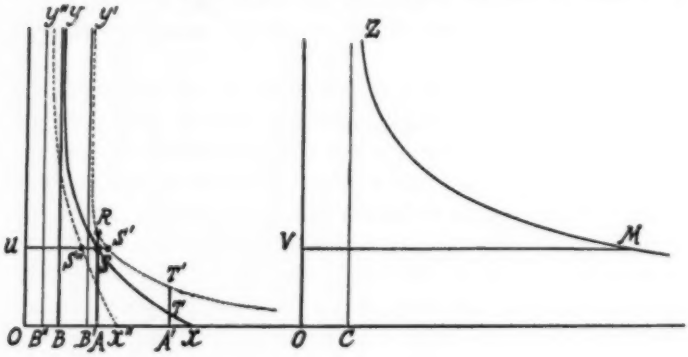

FIG. 2

also on the same horizontal line) and if $US+VM$ is equal to the income of the individual:

$$\overline{US}+\overline{VM}=s+m=r\,,$$

equilibrium is attained.

We may join the two conditions in one single equation, which we may call the fundamental equation of the consumer's equilibrium:

$$u(s)=\varphi(r-s)\,.$$

18. We may now vary the price, causing it both to increase and to decrease from unity. To each price there corresponds a transformation of the curve YX (Fig. 2). It will usually be necessary to displace the horizontal line VM up or down, as the case may

be, in order to reach the new position of equilibrium, which will tell us whether the expenditure s has changed, and in what way. In this way, to every magnitude of p there will correspond a magnitude of s; and since the demand varies in a sense opposite to that of the variation of p, we will at once perceive whether the outlay curve is positively or negatively inclined, or horizontal.

IV. ANELASTIC UTILITY CURVES

19. Let us begin with the most simple case, and assume that the utility curve of our commodity is an equilateral hyperbola. Whatever coefficient p we may use to transform a given equilateral hyperbola, we will always obtain the same hyperbola: *every equilateral hyperbola coincides with all its transformations.* This is easy to understand. Let us take a point S of the hyperbola (Fig. 3), multiply the abscissae by p (whatever the value of p may be, so long as it is positive) and divide the ordinates by the same p. We will have a new point T which will still be on the old hyperbola.

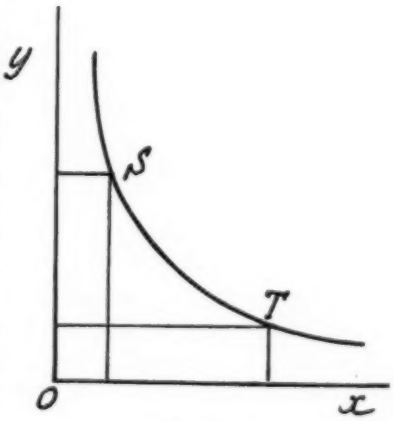

FIG. 3

In fact, the hyperbola is defined by the property that the rectangle of the co-ordinates of its two points is a constant. If we multiply the base of a rectangle by a number p and divide the altitude by the same number, the new rectangle will also have the same area as the original one; consequently, the new vertex T will still lie on the old hyperbola.

20. From this it follows that, whatever the value of p, the distribution of expenditure will always be made in the same way, or in other words, whatever the value of p, the expenditure, US remains constant (Fig. 2). But this is precisely the definition of

the anelastic demand curve. *Therefore, if the utility curve is anelastic, the individual demand curve is also anelastic.*

V. INELASTIC UTILITY CURVES

21. We now pass on to inelastic utility curves, or curves of the second species. The characteristic feature of these curves is that when we make the point A move along the horizontal axis toward the origin, the rectangle $OA \cdot AS$ increases (Fig. 2.). It follows that the utility curve never meets the axis of the ordinates. If it did meet it, the utility rectangle would be reduced to zero at the point of meeting. Therefore, the curve must be asymptotic to the axis of the ordinates, or it must be asymptotic to a vertical line at a positive distance τ from the axis, as in Figure 2, where $\sigma = \overline{OB}$. (The reader will observe that in the present paper we assume utility curves to be *continuous*.)

What is the economic meaning of the distance between the asymptote and the axis of the ordinates? It indicates the quantity of the commodity (A) which is absolutely indispensable to the individual; if the consumption were reduced below this point the individual would die. Therefore, the quantity here referred to is a component of what students of social problems call the minimum of subsistence. We will adopt the hypothesis that there is a minimum since it represents the more general case. The hypothesis that the asymptote coincides with the axis of the ordinates is merely the special case of $\sigma = 0$.

22. We must now make some hypothesis about the form of the utility curve of the money spent on other commodities. It is convenient to assume that the indispensable commodities are more than one in number, so that even if we suppose (A) to be indispensable, there always remain other commodities that are equally indispensable. At the existing market prices an amount of money μ will be required to purchase the minimum quantities of all commodities other than (A). Then the curve of the utility of residual expenditure will be asymptotic to a vertical line having a distance of μ from the axis of the ordinates. In Figure 2 we have

$$\mu = \overline{OC}\,.$$

Therefore, the absolute minimum of money required by the individual, assuming that the price of (A) is unity, will be

$$\sigma+\mu=\rho\,.$$

We will suppose that the income of the individual is greater than this minimum: $r>\rho$.

23. Given the utility curves YX and ZM (Fig. 2) and given the income r, we will be able to determine the equilibrium distribution of income, that is, we will be able to ascertain the magnitude of s and m. Suppose that we have solved the problem, and that

$$s=\overline{US},\ m=\overline{VM}\,.$$

Let us now, by way of experiment, raise the price. In order to make this notion precise, let us suppose the price to be doubled $(p=2)$.

Let us, therefore, look for the point corresponding to S (Fig. 2) in the transformed curve, and let this point be T'. Let the vertical line drawn through T' cut the original curve YX at the point T. The point T' is higher than T. In fact, it follows from the definition of the inelastic curve that the rectangle $\overline{OA}\cdot\overline{AS}$ is greater than the rectangle $\overline{OA'}\cdot\overline{A'T}$. But from the definition of the transformation, the same rectangle $\overline{OA}\cdot\overline{AS}$ is equal to the rectangle $\overline{OA'}\cdot\overline{A'T'}$. Therefore:

$$\overline{OA'}\cdot\overline{A'T'}>\overline{OA'}\cdot\overline{A'T}\,.$$

Therefore:

$$\overline{A'T'}>\overline{A'T}\,.$$

Now what we have done in the case of the point S could be repeated in that of any other point on the curve YX (excluding the extremities). When we have made the transformation we will always find a point which is above the original curve. It is easy to follow intuitively the course of the transformed curve corresponding to the price $p=2$. This will be asymptotic to an axis having a distance of $\overline{OB'}=2\sigma$ from the axis of the ordinates. And it will be raised, or more appropriately expressed, it will be

shifted to the right throughout its length (it may, of course, also be altered in shape).

There is one point of which it may be said a priori that its distance from the origin will be doubled: namely, the point B. That is to say,

$$\overline{OB'} = 2\overline{OB} .$$

If the curve YX meets the horizontal axis as in Figure 2 (but this does not necessarily happen), the transformed curve will meet the same axis at a point whose abscissa will be twice OA'.

24. What will be the effect of this displacement of the curve on the distribution of the individual's expenditure? Let us produce the line US to meet the transformed curve at S'. If by a miracle the income of the individual were increased by the amount $\overline{SS'}$, he would merely have to spend the increment of income in the purchase of (A) in order to be once more in a position of equilibrium. But, having to live on his original income, he will clearly divert money from the consumption of other commodities. In fact, if he continued to make his old expenditure of $\overline{US}$ on (A), the marginal utility of money in this use (i.e., $\overline{AR}$) would be greater than the marginal utility of money spent on other commodities (i.e., $\overline{VO}$). By transferring money from other uses to (A), he will lower $\overline{RA}$ and raise $\overline{VO}$: in the new equilibrium the marginal utilities will be fixed at a level intermediate between $\overline{RA}$ and $\overline{VO}$, that is to say, between $\overline{RA}$ and $\overline{SA}$: therefore, it will be necessary to remove from $m = \overline{VM}$ only *a part* of the quantity $\overline{SS'}$.

In any case, it is our object to point out that the doubling of the price has made the expenditure $s = \overline{US}$ increase. And since the doubling of the price involves a reduction in demand, we may conclude that *the doubling of the price has made the outlay and the demand change in opposite directions.*

25. This conclusion, proved for the case $p = 2$, is valid generally. Let us suppose that $p = 3$. Then the situation will be the same as if we were to start from the transformed curve $\overline{Y'T'}$ (Fig. 2) and assume that the price had changed from 1 to 1.5. The curve will shift once more to the right: the points B' and X' will increase their distance from the axis of the ordinates by 50 per cent.

On the other hand, it is easy to see that when p becomes smaller than unity, the curve YX will shift to the left. If, for instance, the price becomes $\frac{1}{2}$, the distance $\overline{OB}$ of the asymptote from the axis of the ordinates and OX will both be halved. The curve will become $Y''X''$. If the amount of money $\overline{S''S}$ happened suddenly to disappear, the individual would once more be in equilibrium. But since there is no reason for assuming a change in the total income, the individual will have to redistribute $\overline{S''S}$ of his expenditure between all the commodities he consumes, including (A); therefore, a part of $\overline{S''S}$ goes to increase the expenditure on (A), but only a part. In fact, the expenditure on that commodity will have *diminished*. The reduction of the price makes the expenditure decrease, but since it makes the demand increase, we see again that demand and expenditure have changed in opposite senses.

26. Now this is precisely the definition of inelastic demand curves.

We may, therefore, claim to have proved the following theorem. *If the utility curve of a commodity is inelastic, the individual demand curve for that commodity is inelastic.*

VI. ELASTIC UTILITY CURVES

27. The reasoning of the preceding section prepares the way for the study of elastic utility curves. The characteristic feature of these curves is that if we make the point A move along the axis of the abscissae away from the origin, the rectangle $\overline{OA} \cdot \overline{AS}$ increases (Fig. 4). It follows from this that *if we wish* to make the curve elastic *throughout its course*, it will never meet the axis of the abscissae. We will here confine ourselves to the assumption that the curve is asymptotic to this axis, and will not consider the more general hypothesis that it is asymptotic to a horizontal axis having a positive distance from the axis of the abscissae. Even the assumption that this latter axis is the asymptote of the curve corresponds to an unreal hypothesis—at least in the static economy where it is assumed that an increase in the consumption of a commodity is not capable of changing the psychological constitution of the individual in such a way as to increase his desire

for that commodity indefinitely—that is, the hypothesis that the need in question is incapable of being satisfied.

28. We will let the curve of marginal utility of residual expenditure assume the same form as in the preceding section, and allow the total expenditure to be distributed according to the principle of § 16. Let $\overline{US}$ be the equilibrium expenditure on commodity (A) (Fig. 4). We will suppose the curve in Figure 4 to have taken the place of the curve $\overline{yt}$ in Figure 2. The quantity $\overline{US}$ represents,

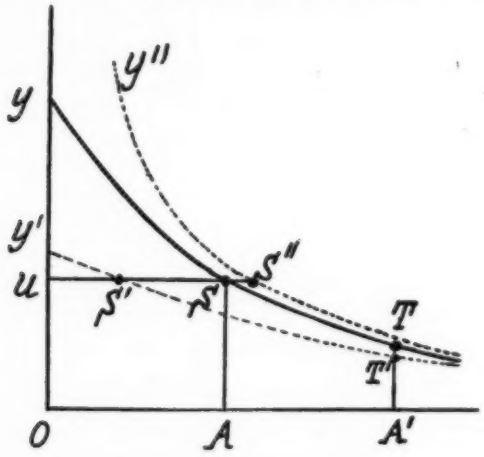

FIG. 4

as before, the amount of money which the individual spends on (A) when the price of this commodity is a unit of money.

29. We may now, by way of experiment, increase the price, and, to make the idea definite, assume that the price is doubled. We then proceed to look for the point in the transformed curve corresponding to S. This will be T' which is necessarily lower than the point T in the original utility curve which has the same abscissa as T'. The reason for this is obvious: the rectangle $\overline{OA'} \cdot \overline{A'T}$, which must be greater than the rectangle $\overline{OA} \cdot \overline{AS}$, is also greater than the rectangle $\overline{OA'} \cdot \overline{AT'}$, which is equal to the rectangle $\overline{OA} \cdot \overline{AS}$. Since S is *any* point on the utility curve, it is clear that the whole of the transformed curve $Y'T'$ is lowered with respect to the original curve. The initial ordinate of the trans-

formed curve if it is finite as $\overline{OY'}$ in Figure 4 (but it could also be infinite) will be half of the initial ordinate ($\overline{OY}$) of the original curve.

30. What will be the effect on the distribution of the individual's expenditure of such a transformation? If for the curve YT we substitute the curve $Y'T'$, the quantity of money $\overline{S'S}$ will remain to be redistributed between the consumption of (A) and that of other commodities. Only a part, therefore, of $\overline{S'S}$ will be reabsorbed by the consumption of (A). The important point, however, is that the increase in the price p has reduced the expense s. And since an increase in the price means a diminution in consumption, or demand, we may also say that *the expenditure has changed in the same direction as demand.* And this is precisely the definition of elastic demand curves.

The conclusion here reached, though deduced from the hypothesis $p=2$, is general in its application. In fact, if we suppose that $p=3$, the result will be the same as if we had started from the transformed curve $Y'T'$ (Fig. 4) and imagined the price to have changed from 1 to 1.5. The curve will be lowered farther.

31. It is easy to see that when p becomes less than 1, the curve YT (Fig. 4) is raised, and the equilibrium is disturbed, because the additional amount of money necessary to preserve it, namely, $\overline{SS''}$, is lacking. Consequently, the horizontal line $\overline{VM}$ (Fig. 2) will have to rise until a quantity of money has been released from $\overline{VM}$ which, added to $\overline{US}$, will permit the sum of the two to touch the transformed curve $Y''S''$. Therefore, the expenditure s will increase. We see, then, that because the price has fallen, while the demand has increased, the outlay has also increased. Again we see that the demand and the expense are changing in the same direction, which is just the definition of elastic curves.

32. We have thus proved the theorem that *if the utility curve is elastic, the individual demand curve is also elastic.*

VII. ELASTIC-INELASTIC UTILITY CURVES: THEOREMS ON THEIR TRANSFORMATIONS

33. The characteristic feature of elastic-inelastic curves, or curves of the third species, is the following: Let $\overline{OA}$ (Fig. 5) be the abscissa of the anelastic point E. If we make the point A run

along the axis of the abscissae toward the origin, the rectangle $\overline{OA} \cdot \overline{AE}$ will diminish until it vanishes, when the curve meets the axis of the ordinates. However, the curve need not necessarily meet the axis of the ordinates. If we cause the point A to move away from the axis of the ordinates, the rectangle $\overline{OA} \cdot \overline{AE}$ will diminish till it is reduced to zero, if the curve meets the axis of the abscissae (which, however, need not necessarily happen). The anelastic point, therefore, is the point at which the rectangle of the co-ordinates is a *maximum*.

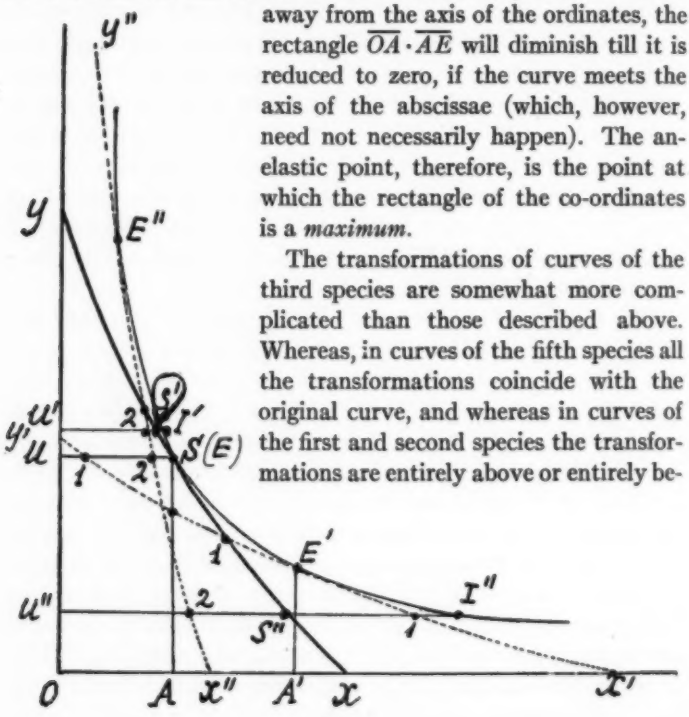

FIG. 5

The transformations of curves of the third species are somewhat more complicated than those described above. Whereas, in curves of the fifth species all the transformations coincide with the original curve, and whereas in curves of the first and second species the transformations are entirely above or entirely below, that is to say, entirely to the right or to the left of the original curve, in such a way that no case arises in which two transformations of the same curve touch or intersect at any point, in the present case all the transformations intersect the original curve, as we shall see. The analysis will, therefore, require a greater length of time. And in order to make it clearer, it has appeared desirable to preface it with a few theorems.

34. Theorem I. The geometric locus of the anelastic points of

all the transformations of a utility curve of the third species is an equilateral hyperbola.

Let YX be the utility curve (Fig. 5). The anelastic point is that which maximizes the rectangle $\overline{OA} \cdot \overline{AE}$. This means that when the point A is displaced toward the right the rectangle diminishes, and when the point is displaced toward the left the rectangle diminishes also.

Let us transform the curve by means of the coefficient $p = 2$. The point E will become E' and the curve YX becomes $\overline{Y'X'}$. The point E' is the anelastic point of the transformed curve. All the points of the old curve which have an abscissa smaller than $\overline{OA}$ will, in the transformed curve, have an abscissa smaller than $\overline{OA'}$ and will lie to the left of E'. And the respective utility rectangles will be smaller than $\overline{OA'} \cdot \overline{A'E'}$ just as the utility rectangles of points to the left of E in the old curve are smaller than $\overline{OA} \cdot \overline{AE}$.[9] Similarly, all the points to the right of E' which correspond to points to the right of E in the old curve have utility rectangles smaller than the rectangle $\overline{OA'} \cdot \overline{A'E'}$. Therefore, $\overline{OA'} \cdot \overline{A'E'}$ is really the maximum rectangle of the transformation. But E' and E lie on one and the same equilateral hyperbola. And on this same hyperbola lie all the anelastic points of all the other transformations, since, instead of making p equal to 2 we could have made it equal to 3, to $\frac{1}{2}$, or to any other positive number; the rationale of the process would have been the same.

35. Now, in the equilateral hyperbola which passes through E, the anelastic point in the original utility curve, two arcs may be distinguished. The arc, along which the point E runs when it moves upward, we will call the *upper* arc; and the arc, over which the point E runs when it moves downward, we will call the *lower* arc. We are thus enabled to enunciate the following propositions:

Theorem II. When the price p increases continuously, starting from unity, the anelastic point of the original curve passes along the lower arc of the hyperbola.

When the price p diminishes continuously, starting from unity, the anelastic point of the original curve passes along the lower arc of the hyperbola.

[9] The rectangles are not shown in the figure, but may readily be imagined.

36. Another corollary of the theorem proved in § 34 is the following:

Theorem III. Every point of the utility curve YX describes an equilateral hyperbola when p varies continuously.

Exception must be made only of the points at the extremities Y and X of the curve. Here we must distinguish two hypotheses.

If Y and X are on the two axes as in Figure 5, the following theorem applies.

Theorem IV. *When "p" increases* continuously, starting from unity, the initial ordinate $\overline{OY}$ (which represents the initial utility of money spent on (A), when the price is unity) diminishes continuously and tends toward zero (which it reaches when the price is infinitely high); while the maximum abscissa $\overline{OX}$ (which represents the expenditure necessary to satisfaction of the need when the price is unity) *increases continuously* and tends toward infinity (the expense which will satisfy the need at an infinitely high price).

On the other hand, when p diminishes continuously, starting from unity, the initial ordinate increases continuously and tends toward infinity (at an infinitely low price); while the maximum abscissa diminishes continuously and tends toward zero (the outlay at zero price).

In any case, if we use $\overline{OY}$ to denote the initial ordinate of the utility curve of (A) and $\overline{OX}$ the maximum abscissa, whatever the value of p, we obtain the result that the initial ordinate of the transformed curve is $\frac{1}{p}\overline{OY}$ and the maximum abscissa is $p \cdot \overline{OX}$.

Theorem V. If, on the contrary, one of the axes or both are the *asymptotes* of the curve, they remain the asymptotes of all their transformed curves.

37. We will also use the phrase *upper arc of the utility curve* to denote the arc which lies between the anelastic point $\overline{E}$ and the axis of the ordinates, and *lower arc* to denote that between $\overline{E}$ and the axis of the abscissae. We already know that the upper arc is the elastic one, and the lower arc is the inelastic one. We may now enunciate the following theorem.

Theorem VI. The point of intersection of the utility curve and

its transformed curves moves along the lower arc of the curve when p increases continuously starting from unity, and along the upper arc of the curve when p diminishes continuously starting from unity.

Let $\overline{OA}$ (Fig. 6) be the abscissa of the anelastic point E of the utility curve YX whose equation is $u=u(s)$. Every equilateral hyperbola having a rectangle inferior to $\overline{OA}\cdot\overline{AE}$ will cut the curve YX in two points. Let us consider the hyperbola having as points of intersection S' and S''. Let us put

$$s_1=\overline{OA'}\,,\qquad s_2=\overline{OA''}\,,\qquad p_1=\frac{s_1}{s_2}\,.$$

We maintain that, when we transform the curve YX by means of the coefficient p, the point of intersection of the transformed and the original curve is just s or the *smaller* of the two abscissae s_1, s_2, when p_1 is *inferior to unity*. Indeed Figure 6 shows that

$$s_1u(s_1)=s_2u(s_2)$$

and since:

$$s_2=\frac{s_1}{p_1}\,,$$

it follows:

$$s_1u(s_1)=\frac{s_1}{p_1}u\left(\frac{s_1}{p_1}\right).$$

As we increase the rectangle of the hyperbola, s_1 increases, s_2 decreases, and p_1 increases till s_1 and s_2 both become equal to $\overline{OA}$ and $p=1$. It follows that p and s_1 *move in the same direction*. When $p=1$, however, and $s_1=\overline{OA}$, s_1 has lost its signification of point of intersection between the curves

$$u=u(s),\ t=\frac{1}{p}u\left(\frac{s}{p}\right),$$

since the two curves coincide in all their length.

Let us now revert to the hyperbola s_1s_2 and put:

$$p_2=\frac{1}{p_1}=\frac{s_2}{s_1}\,.$$

We see that s_2 is the point of intersection of the original utility curve and the curve transformed by means of the price p_2 (superior to unity). As p_2 diminishes, the point A'' moves toward A and touches it when $p=1$.

We have then not only furnished the demonstration of the theorem VI but also discovered a new, interesting meaning of the anelastic point in the utility curves of the third species.

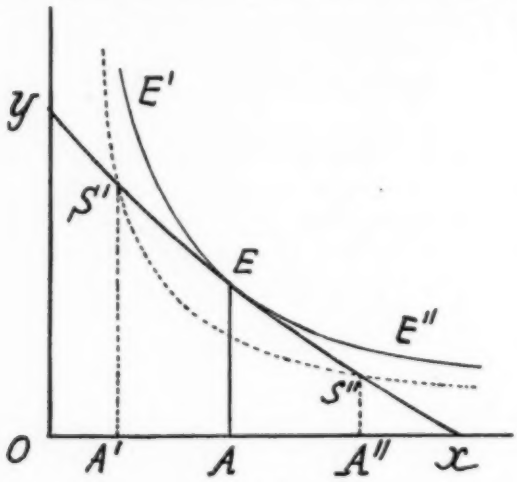

FIG. 6

Theorem VII. The *anelastic point* of an elastic-inelastic curve is the *limit* toward which the point of intersection of the original and the transformed utility curves is tending, when the price p approaches unity.

38. Theorem VIII. The *anelastic* point of every transformed curve is *to the right of* and *below* the point of intersection of the same transformed curve with the original curve whenever p is greater than 1. And it moves farther down and farther to the right as p increases.

Similarly, the *anelastic* point is *to the left of* and *above* the point of intersection if p is smaller than 1; and it moves farther to the left and upward as p diminishes. (See Fig. 5 where the points

E'', E' are anelastic points. These are always the points at which the transformed curve touches the only hyperbola passing through E.)

39. Theorem IX. All the transformed curves are included in the plane inclosed by the two axes and the hyperbola that passes through the anelastic point of the original curve.

In fact, this hyperbola is the geometric locus of the *maximum* rectangles.

We call this envelope-hyperbola the *superior hyperbola.*

40. It may now be seen clearly what happens as soon as p departs from unity. The point Y is lowered. (It becomes Y', Fig. 5.) In a first arc the transformed curve $Y'X'$ remains below the original curve, YX, then passes above it, and after that becomes a tangent to the superior hyperbola (at the point E'). Up to this point the transformed curve is elastic. *The elastic arc of the transformed curve corresponds precisely to the elastic arc of the original curve:* both of them end at the point of tangency with the superior hyperbola. An inelastic arc follows. This ends at the point X', to the right of X (Fig. 5). These phenomena become accentuated as p increases. That is, $Y'X'$ is lowered farther and X' moves farther away from the origin.

The results are the opposite of this when p becomes less than unity. The point Y is raised. In its upper, elastic arc the transformed curve lies above the original curve, and this arc ends at the point E'' at which it is a tangent to the superior hyperbola. In its lower inelastic arc, the transformed curve, as it moves away from the point of tangency, having previously lain above the original curve, now intersects it and passes below it (see, for example, the curve $Y''X''$ in Fig. 5).

VIII. DEMAND CURVES DERIVED FROM ELASTIC-INELASTIC UTILITY CURVES

41. We may now undertake the final investigation.

What happens to the segment $\overline{US}$ (Fig. 2) when p varies?

Here it is convenient to distinguish three cases.

In the original utility curve YX (Fig. 5) the point E at which the curve is a tangent to an equilateral hyperbola is the *anelastic*

point. At this point the rectangle of utility $\overline{OA}\cdot\overline{AE}$ is the *maximum* of all the possible rectangles of the curve. Let us call the abscissa of the anelastic point the *anelastic consumption*, and let us designate it with the symbol a_η. We will have

$$a_\eta=\overline{OA}$$

The anelastic consumption depends only on the shape of the curve $u=u(a)$ or YX of Figure 5. Indeed it is the solution of the equation:

$$u(a)+au'(a)=0\,.$$

It does not change whatever is the shape of the curve $\varphi(m)$, or ZM of Figure 2.

We know that, given the two curves YX and ZM (Fig. 2) and given the income r, then US, which is the *equilibrium* demand or outlay of the commodity (A) *at a price of unity*, will be determined; we will call this the *original* demand or outlay, and we will use to denote it the symbol $\bar{x}$ or $\bar{s}$ (compare § 17). Now the three cases to be considered are those in which the original demand happens to be greater than, equal to, or less than, the respective anelastic consumption.

$$\bar{x}\gtreqless a_\eta$$

We will investigate these three cases.

42. Let us suppose that the point of equilibrium coincides with the anelastic point.

$$\bar{x}=a_\eta=\overline{US}$$

Then, Figure 5 shows that, as p increases, starting from unity, the point S moves toward the vertical axis: e.g., when $p=2$ the segment $\overline{US}$ has already shrunk to $\overline{U1}$. If $\overline{US}$ is shortened this does not mean that the outlay diminishes by the same quantity. We already know that if $\overline{US}$ becomes $\overline{U1}$, a part of the money $\overline{1S}$ is reabsorbed by the demand for (A). But it is certain that if $\overline{US}$ shrinks, the outlay will also be reduced.[10] We also know that

[10] In Figure 5 we gave two letters to the anelastic point. It is S in so far as it belongs to the utility curve UX; it is E in so far as it belongs to the hyperbola that

the diminution of $\overline{US}$ and, therefore, of S is progressive, since if, for example, $p=2$ the segment $\overline{US}$ has shrunk to $\overline{U1}$, while a further increase of p will make $\overline{U1}$ diminish farther, until we have a price at which the outlay vanishes, the prohibitive price.[11]

Let us suppose, on the other hand, that p diminishes, starting from unity. Then the segment $\overline{US}$ will again shrink. When, e.g., $p=\frac{1}{2}$, the point S has already run along the segment $\overline{S2}$. As p continues to diminish, the point S continues to approach U until, when the price becomes zero, the transformed curve coincides with axis OY and the point S with U.[12]

We may now understand how the outlay varies as the price varies. When the price p is zero the outlay s is zero. As the price increases the outlay increases (the point S moves from U toward E). When *the price* is equal to *unity*, the *outlay* has reached its *maximum* and is equal to the segment UE. As soon as the price increases beyond this, the outlay begins to fall (the point S moves toward U) till the point is reached where the price is such as to cause the outlay to vanish.[13]

43. Now this curve which gives s as a function of p permits us to understand the nature of the outlay curve, which gives us s as a function of the demand x. We already know that x and p, demand and price, vary inversely. When the price is prohibitive the demand is zero and it follows that the outlay is zero.[14] When the price falls the demand increases, and we may infer that the outlay increases. When the price is equal to unity we infer that

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passes through S. The variation of p changes the shape of the utility curve and displaces the point S but, of course, it has no effect on the particular hyperbola we have designated by $E''EE'$.

[11] The prohibitive price is equal to

$$\frac{u(O)}{\varphi(r)}.$$

A demonstration of this theorem is given in my article "Ancora sull'offerta del risparmio" in *Giornale degli economisti*, September, 1927, § 13. If, therefore, $u(O)=\infty$, the prohibitive price also $=\infty$.

[12] We exclude the hypothesis, mathematically, but not economically, admissible, of a consumption $=\infty$ (compare § 27).

[13] See n. 11.

[14] If the prohibitive price is ∞, the outlay at the demand O may be a positive quantity.

the outlay is a maximum and equal to $\overline{UE}$, and that the *anelastic demand* (which is equal to the maximum outlay divided by the price) is also equal to $\overline{UE}$ or to anelastic consumption. When the price diminishes further the demand increases until, when the price is zero, it becomes $\overline{OX}$, which is the quantity that satisfies the need. As the demand (abscissa) increases from zero to $\overline{OA}$, the outlay (ordinate) increases from zero to $\overline{UE}$, and as the demand increases from $\overline{OA}$ to $\overline{OX}$ the outlay decreases from $\overline{UE}$ to zero. It is thus clear that the demand curve is of the third species.

44. The shape of the utility curve YX (Fig. 5) determines not only the species of the demand curve (which shall first be elastic and then inelastic) but also the anelastic demand.

I. Let us call x_η the anelastic demand, s_η the maximum outlay, p_η the price that maximizes the outlay, so that it is, by definition, $s_\eta = x_\eta p_\eta$. Now we have shown that the anelastic *demand*, which is determined through the general equation of consumer's equilibrium, is equal to the anelastic *consumption*, which is independent of the consumer's equilibrium, $x_\eta = a_\eta$.

II. It is also the shape of utility curve YX that fixes the *satiating demand*.

III. On the contrary, the *prohibitive price* depends upon the shape of the utility curve YX, or, at least, upon its initial ordinate, and upon the final degree of utility of money $\varphi(r)$ calculated on the hypothesis that no money is spent on (A). This last magnitude $\varphi(r)$, in its turn, depends: (1) on the shape of the curve $\varphi(m)$, or ZM of Figure 2, which implies the shape of all other utility curves of the individual and fixed magnitudes of all the prices, that of (A) excluded; (2) on the amount of the income r.

45. We now pass on to the hypothesis that the demand or outlay at the original equilibrium is less than $\overline{US}$ and is, let us say, $\overline{U'S'}$ (Fig. 6); this hypothesis may be expressed in the form $\bar{x} < a_\eta$. When the price *increases*, beginning at unity, it is clear that the transformed curve moves downward, the segment $\overline{U's'}$ diminishes, and therefore s diminishes also, till it vanishes when the price becomes equal to $\frac{\overline{OY}}{\overline{OU'}}$. This is, however, not yet the prohibitive price.

On the other hand, when the price *diminishes*, starting from unity, the segment $U'S$ and the outlay are increased. In this case the limit of the point S' is the point I' at which the horizontal line meets the hyperbola $E''EE'$, since, as we know, this hyperbola is the envelope of all the transformations. The maximum outlay, however, will not reach $\overline{U'I'}$, since we know that a part of $\overline{S'1'}$ must be absorbed by the other consumptions.

It is, however, possible to find out graphically the maximum outlay. Let us turn the curve ZM (Fig. 2), by an angle of 180°, around the ordinate which represents the final degree of utility in the original equilibrium, and which will now represent the new Y-axis. Let us superimpose the new curve upon the curve YX in such manner that the new axis of the new curve coincides with the axis of the curve YX. The new curve, after cutting the curve YX at the point S', will intersect the superior hyperbola at a point whose abscissa represents the maximum outlay. Such abscissa is, of course, inferior to $\overline{U'I'}$. It is important to note, for the conclusions we shall draw in § 47, that, the maximum outlay being an abscissa of the superior hyperbola, the rectangle of utility is a maximum one.

When p diminishes beyond the magnitude that renders the outlay a maximum, the segment $\overline{U'I'}$ begins to contract till it once more becomes equal to $\overline{U'S'}$. As p continues to diminish, the point S' moves toward U': thus when $p=\frac{1}{2}$, the segment $\overline{U'S'}$ is transformed into the segment $\overline{U'2}$.

46. Thus far we have expounded a relation between *price* and outlay. It will be easy to translate this into a relation between *demand* and outlay. We have seen that if the price increases starting from unity, the outlay diminishes. But increasing price and diminishing demand are the same thing. Therefore, if the demand diminishes, starting from $\overline{U'S'}$ the outlay diminishes.

We have seen that if the price diminishes, starting from unity, the outlay will first increase and then diminish. This is equivalent to saying that if demand increases from $\overline{U'S'}$ as a starting point the outlay will first increase to $\overline{U'I}$ and will then diminish. The demand curve is therefore elastic in the first part and inelastic in the second part, and is therefore of the third species;

and the original outlay $\overline{U'S'}$ falls in the positively inclined portion of the outlay curve, and therefore corresponds to an *elastic point* on the demand curve. The same conclusion may be stated in more elegant fashion thus: when the demand of the original equilibrium falls in the elastic portion of the *utility* curve, it also falls in the elastic portion of the *demand* curve.

47. The third and last hypothesis now remains to be examined: this is that the demand or outlay of the original equilibrium is greater than $\overline{US}$, and is, let us say, represented by the segment $\overline{U''S''}$ of Figure 5. This may be expressed in the form $\bar{x} > a_1$.

Following the procedure indicated in § 45, we observe that, as soon as the price p becomes less than unity, the point S'' moves toward U''. For instance, when the price is $\frac{1}{2}$, the segment $\overline{U''S''}$ becomes $\overline{U''2}$. The outlay therefore diminishes.

On the other hand, when p becomes greater than unity, the transformed curve is lowered and the segment $\overline{U''S''}$ increases. For instance, when $p=2$ the segment $\overline{U''S''}$ becomes $\overline{U''1}$. The maximum length of the segment is $\overline{U''I''}$: the maximum outlay, however, is inferior to $\overline{U''I''}$, since a part of $\overline{S''I''}$ must be distributed among the other consumptions. But a construction analogous to that explained in § 45 will permit us to find out the maximum outlay. As the price continues to increase, the point $\overline{I''}$ will move backward, and will end by coinciding with $\overline{U''}$ when

$$p=\frac{\overline{OY}}{\overline{OU''}}\,.$$

This, however, is not yet the prohibitive price.

If we now put demand in the place of price we obtain our outlay curve; we will then find that this is positively inclined in the first part and negatively inclined in the second, and that the original outlay is in the negatively inclined part of the outlay curve, and therefore corresponds to an inelastic point in the demand curve. Here again is to be observed the correspondence between the inelastic portions of the utility and demand curves. Since the original consumption was inelastic (with respect to utility) the demand is also inelastic (with respect to price.)

48. Gathering together the threads of the argument, we find that *an elastic-inelastic utility curve gives rise to an elastic-inelastic demand curve.* The demand curves for the commodity (A) are of course as many in number as are the possible magnitudes of the income of the individual; the outlay curves also vary in shape and dimensions in accordance with income. They all have a positively inclined portion and a negatively inclined portion. And we can immediately tell whether the outlay of the original equilibrium—that is, the outlay on the assumption that the price of the commodity is unity—belongs to the positively inclined or to the negatively inclined branch of the outlay curve or is a maximum, if we are told whether the original consumption falls in the elastic portion, the inelastic portion, or on the anelastic point of the utility curve of the commodity.

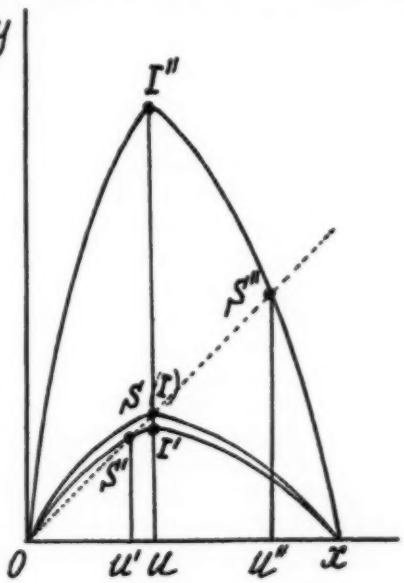

FIG. 7

A simple construction enables us to state these conclusions in a better way. The three curves, $OI'X$, OSX, $OI''X$ (Fig. 7), are the three outlay curves studied in the preceding paragraphs. The demands are measured on the axis of the abscissae and in each case OX is the satiating demand. The outlays are measured along the axis of the ordinates.

The segments $\overline{U'S}$, $\overline{US}$, $\overline{U''S''}$, which are respectively equal to the segments represented by the same symbols in Figure 5 are the outlays at a unit price corresponding to various incomes. The points S', S, S'', lie, of course, on the bisector of the angle YOX, because, at a unit price, the demand is always equal to outlay.

The abscissa which makes the outlay a maximum, namely $\overline{OU}$ (Fig. 7), is the same in the three curves, and coincides with the abscissa $\overline{OA}$ (Fig. 5) of the anelastic point of the utility curve. Indeed, the greatest outlay on (A) which is permitted by a given income is that which maximizes the utility rectangle of the outlay (Fig. 5). But there is only one magnitude of consumption, $\overline{OA}$, which can maximize the utility rectangle of the outlay, and therefore $\overline{OA}$ is the demand which maximizes all outlays. The *anelastic demand* (x_η) *is always the anelastic consumption* $(\bar{a}_\eta)$.

IX. INELASTIC-ELASTIC CURVES

49. The fourth species of curves now remains to be considered; but the examination of these curves is greatly facilitated by the concepts and arguments expressed above.

The curves which we now have to consider have the following characteristics: Let A be the abscissa of the anelastic point E (Fig. 8). As the point A moves along the axis of the abscissae toward the origin, the rectangle $\overline{OA} \cdot \overline{AE}$ grows continually until it becomes infinite when the abscissa is reduced to a minimum $\overline{OB}$, representing an amount necessary for sustenance. As the point A runs along the horizontal axis away from the origin, the rectangle $\overline{OA} \cdot \overline{AE}$ increases indefinitely without limit. The curve is therefore open at each extremity and the anelastic point is the point at which the rectangle of the co-ordinates is a *minimum*.

50. The method used here is by now, we hope, familiar to the reader. We therefore will regard the following theorems as proved.

Theorem I. The geometric locus of the anelastic points of all the transformations of a utility curve of the fourth species is an equilateral hyperbola.

Theorem II. When the price p increases continuously, from unity as a starting point, the anelastic point of the original curve runs along the upper segment of the hyperbola. When the price diminishes continuously from unity as a starting point, the anelastic point runs along the lower part of the hyperbola.

Theorem III. Every point of the original curve describes an equilateral hyperbola as p varies.

Theorems IV and V. As p increases continuously, starting from unity, the vertical asymptote moves away from the axis of the ordinates continuously, whereas, when p diminishes continuously from unity, the vertical asymptote approaches the axis of the ordinates continuously. In each case, if we call the distance between the asymptote of the original curve and the axis of the ordinates OB, the distance between the asymptote and the axis of the ordinates is $p \cdot \overline{OB}$.

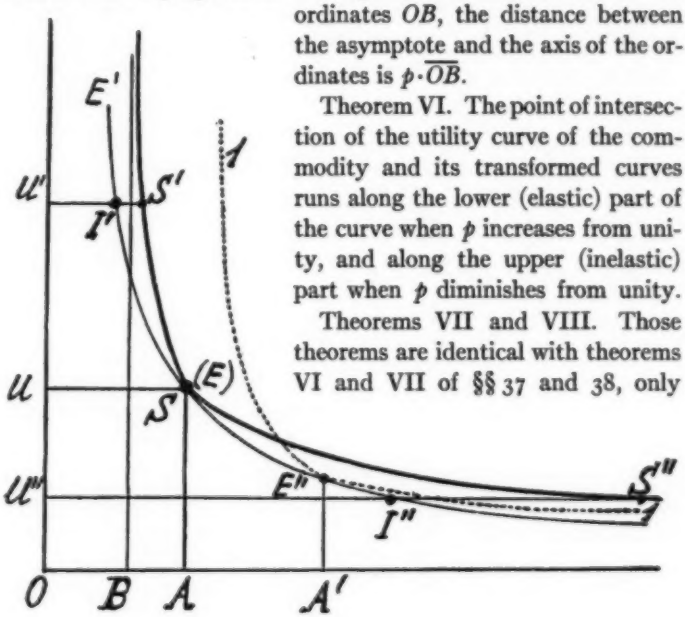

FIG. 8

Theorem VI. The point of intersection of the utility curve of the commodity and its transformed curves runs along the lower (elastic) part of the curve when p increases from unity, and along the upper (inelastic) part when p diminishes from unity.

Theorems VII and VIII. Those theorems are identical with theorems VI and VII of §§ 37 and 38, only changing the name of the curve (inelastic-elastic) in theorem VII.

Theorem IX. All the transformed curves lie on the concave side of the hyperbola which passes through the anelastic point of the original curve. This envelope-hyperbola is the geometric locus of the *minimum* rectangles. We will call it the inferior hyperbola.

51. We now see clearly what happens as soon as p begins to rise above unity. The point B moves away from the origin. The

first part of the transformed curve (see the dotted curve in Fig. 8) lies above the original curve; the next part lies below it. After having cut the original curve, the transformed one touches the inferior hyperbola. Up to this point the transformed curve is inelastic. An elastic part follows: This lies between the original curve and the inferior hyperbola.

On the other hand, if p becomes less than unity, the point B approaches the origin. In its upper portion the transformed curve remains inelastic (this transformed curve has not been drawn in order not to complicate Fig. 8). This portion lies between the original curve and the inferior hyperbola, up to the point where it becomes a tangent to the latter. In a second portion, in which it is *elastic*, it at first lies between the inferior hyperbola and the original curve, and then intersects the latter and passes above it, and has as its asymptote the axis of the abscissae.

52. Here, too, we must now distinguish three cases.

I. The original equilibrium makes $\bar{x} = a_1 = \overline{US}$ (Fig. 8), or coincides with the anelastic point of the original utility curve. Then $\overline{US}$ is the *minimum* outlay, and, however p may vary, the outlay must increase.

The curve which has its minimum at S (Fig. 9) can give us an idea of these relationships. Let the abscissae indicate demand and the ordinates outlay. The segment $\overline{OU}$ is the demand at a unit price, and the segment $\overline{OS} = \overline{OU}$ is the outlay at a unit price.

II. The original equilibrium makes $\bar{x}$ smaller than $a_1 = \overline{US}$, let us say equal to $\overline{U'S'}$ (Fig. 8). Then as p increases, moving away from unity, the outlay $\overline{U'S'}$ diminishes, reaches a minimum (which is, however, superior to $U'I'$), and then begins to increase. On the other hand, if p diminishes, the outlay increases. The curve which has its minimum at I' (Fig. 9) will serve to indicate this. The segment $\overline{OU'}$ is the demand at a unit price, and $\overline{OS'} = \overline{OU'}$ is the outlay at a unit price.

III. At the original equilibrium $\bar{x}$ is greater than $a_1 = \overline{US}$, let us say, equal to $\overline{U''S''}$ (Fig. 8). Then as p increases, moving away from unity, the outlay diminishes, reaches a minimum (which is, however, superior to $\overline{UI''}$), and then begins to increase, while, with the growth of p, the outlay increases. Translating this re-

sult into terms of demand and outlay, we obtain the curve $I''S''$ of Figure 9, where $\overline{OU''}$ and $\overline{U''S''}$ are demand and outlay respectively at a unit price.

Figure 9 shows that in each case the outlay curve is of the fourth species, like the utility curve which gives rise to all of

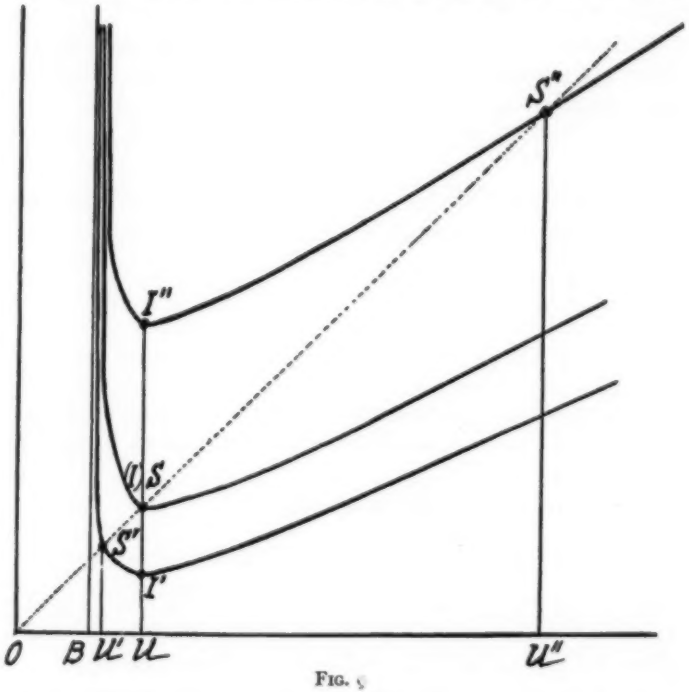

FIG. 9

these curves, and in each case the abscissa of the anelastic point of these curves is the same and is identical with the anelastic point of the utility curve. Here also the anelastic demand coincides with the anelastic consumption.

X. ANALYTICAL DEMONSTRATION OF THE THEOREM OF HOMOGENEOUS ELASTICITY

53. Before closing this article, we wish to furnish an analytical proof of our theorem. Such proof will be greatly facilitated by the exhaustive geometrical treatment given before.

We start from the fundamental equation of the consumer's equilibrium (§ 17) only replacing the first member by the family of the transformed curves:

$$\frac{1}{p}u\left(\frac{s}{p}\right)=u(r-s)\,.$$

The income r is fixed, the two variables are p, the price of (A), and s, the equilibrium outlay made on (A). To every price there corresponds an equilibrium outlay, so that we may write:

$$s=s(p)\,.$$

Now, in order to see how the equilibrium outlay s is changing, as p changes, it is necessary to calculate the derivative:

$$\frac{ds}{dp}=\frac{u\left(\frac{s(p)}{p}\right)+\frac{s(p)}{p}u'\left(\frac{s(p)}{p}\right)}{u'\left(\frac{s(p)}{p}\right)+p^2\varphi'(r-s(p))}\,.$$

As both u' and φ' are negative, the entire denominator is negative, and the sign of the derivative is opposite to that of the numerator N.

This numerator can also be written:

$$N=u\{x(p)\}+x(p)u'\{x(p)\}\,,$$

since the demand is always equal to the outlay divided by the price, and if the outlay is a function of the price, the demand is also a function of the price and may be indicated by $x(p)$.

54. A further consideration will yet simplify our aim. It can be easily shown that $\frac{ds}{dx}$, the derivative which is of most use to us, since it explains the shape of the *outlay* curve, has the sign opposite to that of $\frac{ds}{dp}$.

Indeed from $x=x(p)$, we may obtain the inverse function $p=p(x)$, and replacing it in: $s=s(p)$ we may write:

$$s=s\{p(x)\}\,.$$

Differentiating, we obtain immediately:

$$\frac{ds}{dx}=\frac{ds}{dp}\cdot\frac{dp}{dx}$$

and as $\frac{dp}{dx}$ is negative, it follows that $\frac{ds}{dx}$ and $\frac{ds}{dp}$ have opposite signs and that $\frac{ds}{dp}=0$ produces $\frac{ds}{dx}=0$.

Since $\frac{ds}{dp}$ and N have also opposite signs, we reach the important conclusion that $\frac{ds}{dx}$ has the same sign as:

$$N=s'\{x(p)\}$$

and vanishes with it.

55. Now let us examine, one after another, the five simple species of utility curves, and let us begin with the first species: *elastic curves*. Their property is that, whenever a is a positive quantity, the utility rectangle $v=au(a)=v(a)$ is increasing with a, or the derivative is positive:

$$v'(a)=u(a)+au'(a)>0$$

(compare § 27 and § 10). Now $x(p)$ being also a positive quantity, we may write

$$u\{x(p)\}+x(p)u'\{x(p)\}=N>0.$$

On the other hand we know that $\frac{ds}{dx}$ has the same sign as N, then $\frac{ds}{dx}>0$. *The outlay curve is increasing*, or *the demand curve is elastic*.

The case of the original utility curve having some point of inflection with the horizontal tangent is not excluded. At such a point we must have

$$v'(a)=0.$$

Let us call a_i the abscissa of such a point. It is sufficient to solve the equation:

$$x(p)=a_i$$

in order to obtain the value of p (we shall call it p_i) for which:

$$\frac{ds}{dp}=0.$$

The same value will also satisfy the equation:

$$\frac{ds}{dx}=0.$$

Consequently, at the point of abscissa $x(p_i)$ the outlay curve will have a horizontal tangent.

We may combine the foregoing conclusions in the single proposition that if $v'(a)\gtreqless 0$, then $\frac{ds}{dx}\gtreqless 0$. *Every utility curve of the first species* gives origin to *a demand curve of the first species.*

56. Adopting the same line of reasoning as in § 55, we see that, from:

$$v'(a)\lesseqgtr 0,$$

it follows that

$$\frac{ds}{dx}\lesseqgtr 0.$$

If the *utility curve is inelastic*, or is of the second species, the *demand curve is also inelastic*, or is of the second species.

57. The study of the *elastic-inelastic* curves is rather more complicated. The peculiarity of these curves is that in the original utility curve, we have:

$$v'(a)\gtreqless 0$$

according as $a\lesseqgtr a_\eta$, a_η being, as stated above, the anelastic consumption. From this it follows that: $N\gtreqless 0$ according as $x(p)\lesseqgtr a_\eta$, and consequently $\frac{ds}{dx}\gtreqless 0$ according as $x(p)\lesseqgtr a_\eta$.

Consequently we have proved that the demand curve is elastic-anelastic, or of the third species, and we have also proved that, when the consumption is anelastic ($a=a_\eta$), the demand curve is also anelastic: $x(p)=a_\eta=x_\eta$. Solving the equation, $x(p)=a_\eta$, we find the price p_η that maximizes the outlay, and multiplying this price by the anelastic demand x_η we obtain the maximum outlay s_η.

58. We may now extend the inquiry, and, after having called $\bar{s}$ and $\bar{x}$, respectively, the equilibrium outlay and the equilibrium demand at the price 1 (therefore $\bar{s}=\bar{x}$), we may distinguish three cases.

I. $x(1)=a_\eta$. Then, for $p=1$, we have

$$N=u(a_\eta)+a_\eta u'(a_\eta)=0,$$

and, consequently, $\frac{ds}{dx}=0$.

The ordinate $\bar{s}$ is the maximum of the outlay curve.

II. $x(1)<a_\eta$. Then, for $p=1$, we have $N>0$ and, consequently, $\frac{ds}{dx}>0$.

The ordinate $\bar{s}$ belongs to the *increasing arc* of the outlay curve.

III. $x(1)>a_\eta$. Then, for $p=1$ we have $N<0$ and, consequently, $\frac{ds}{dx}<0$.

The ordinate $\bar{s}$ belongs to the *decreasing arc* of the outlay curve.

59. In analogous manner it can be shown that, if the utility curve is inelastic-elastic, or of the fourth species, the Walras plane demand curve is of the same species, or inelastic-elastic.

60. Finally we find the anelastic utility curves, or curves of the fifth species. They are defined by the property that, whenever a is a positive quantity, $v'(a)=0$. If $x(p)$ denotes also a positive quantity, it follows then that: $N=v'\{x(p)\}=0$ and, consequently, $\frac{ds}{dx}=0$, which signifies that the demand curve is anelastic.

61. We have thus succeeded, we hope, in showing that, from each species of utility curves we may derive a Walras plane demand curve of the same species, or homogeneous to it.

XI. CONCLUSION WITH REGARD TO INDIVIDUAL DEMAND CURVES AND FINAL DEGREE OF UTILITY OF MONEY

62. All the preceding arguments, therefore, lead to the conclusion that utility curves and individual demand curves are homogeneous to one another. We may state the same proposition in different words by saying that *the rectangle of the demand curve* (or the expense) *behaves exactly as the rectangle of utility*. Elastic utility curves always give rise to elastic demand curves in the complicated equilibrium of Walras, and inelastic utility curves to inelastic demand curves, and so on. Thus we see that the laws of individual demand have their root in the psychological constitution of the individual, and are universal and eternal if the universality and fixity of the premises be assumed, that is, if we assume the desire of man to maximize the sum of the utilities which may be obtained from his income, divisibility of commodities and enjoyments, and the freedom of the individual to buy as much as he wants at given prices. The theory of demand thus acquires an unshakable solidity. The clear understanding of the masters of political economy, from Gossen to Pantaleoni, from Jevons to Marshall, from J. B. Clark to Irving Fisher, who held firm to the concept of utility and made of it the foundation of the science, is thus vindicated. To remove from economic science the concept of utility, under the pretext that it is not measurable, is to deprive economics of its original essence and make blind the play of economic facts.

63. We may also draw and emphasize a general theorem bearing on the final degree of utility of money. We have seen that, if the curve of final degree of utility of a certain commodity (A) is elastic, the outlay s moves in the same direction as the demand, and if it is inelastic, it moves in the opposite direction. But if the outlay s increases or decreases, the residual outlay m moves in opposite direction from s. Now the final degree of utility of m,

which must be equal to the final degree of utility of s, since $u(s) = \varphi(m)$ and is therefore the final degree of utility of all the money r, moves in a direction opposite to that of m and therefore in the same direction as s.

Thus we are justified in the following principle: The variation of the final degree of utility of all the money of the individual, as the price and consequently the demand of a certain commodity (A) is changing, is ruled by the elasticity of the utility curve of (A). If the curve of final degree of utility of (A) is elastic, the final degree of utility of all the money r and the demand for (A) move in the same direction; if it is inelastic, they move in opposite directions; if it is anelastic, the final degree of utility of all the money remains constant.

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THE APPLICATION OF THE QUANTITATIVE METHOD TO ECONOMIC HISTORY[1]

AS THE first attempt to apply quantitative methods systematically to economic history on a large scale, the appearance of Professor Clapham's *Economic History of Modern Britain* marked an important advance. But neither the fact nor the significance of this departure in method was clearly apprehended when the first edition was published in 1926. The reviews cover a wide range in their discussions, but this feature of the book escaped any explicit notice. There are, indeed, some comments that indicate a vague perception of the issue that was joined with the group of writers that may be called "institutionalists," but most of the reviews remark on the absence of generalization and the skilful manner in which the contemporaries are made to tell their own story. They comment on the unobtrusiveness of the author even in discussions of policy. This emphasis on the objectivity of the book, and the relative neglect by reviewers of the underlying implications were doubtless due in part to limitations of space; but when all allowances have been made, the fact remains that the important issue was not adequately recognized by the reviewers whose criticisms are readily accessible.[2] This is

[1] J. H. Clapham, *An Economic History of Modern Britain. The Early Railway Age. 1820–1850.* 2d ed. Cambridge: University Press, 1930. Pp. xvi+623.

The revision of the text in this edition is largely confined to corrections of details, though in two or three places the revision has extended to an entire paragraph. There are many additions to the footnotes, so that references to current literature are brought up to date. These additions are inclosed in brackets, so that new material can be readily identified, as changes in the text can be traced from the changes in the notes. The Preface is also new. Mr. Hammond's criticism is discussed.

[2] Anonymous, *New Statesman*, XXVIII (January 22, 1927), 452; Anonymous, *London Times Literary Supplement*, XXVI (March 17, 1927), 169; H. L. Beales, *Economica*, VII (June, 1927), 233; F. C. Dietz, *American Historical Review*, XXXII (July, 1927), 863; E. Halévy, *Economic History Review*, I (January, 1927), 360; J. L. Hammond, *Manchester Guardian* (the file is not accessible to the present writer); Hammond, *Economic History Review*, II (January, 1930), 215–28; T. H. Marshall, *English Historical Review*, XLII (1927), 624; F. W. Ogilvie, *Scottish Historical Review*, XXIV (1927), 311; J. F. Rees, *Economic Journal*, XXXVII (June, 1927), 257; A. P. Usher, *American Economic Review*, XVII, Part 2 (1927), 694.

the more remarkable because Professor Clapham in his Preface called attention to the attempt to base his judgments and his interpretation upon quantitative data. Having already referred to the scale of the work, and the importance of destroying the legends that have arisen because historians have been prone to follow a literary tradition without much regard to known fact, he continues: ". . . . it is possible, all along the line, to make the story more nearly quantitative than it has yet been made. . . . . We are not in the full statistical age. There are no mineral statistics before the 'fifties. Even foreign trade statistics—one of the oldest series—are very defective, and civil registration of births, deaths and marriages got going only in the same year as the Statistical Journal. Much approximation must be tolerated, and some guessing; but if the dimensions of things are not always clear, at least an attempt has been made to offer dimensions, in place of blurred masses of unspecified size.

"Figures are invaluable; but the statistician's world is not the historian's. Nor is the general historian's world that of the monograph writer. As a balance to the unreality of the generalized statistical statement and the undue influence of monographs on particularly important trades or topics . . . . it has seemed wise to quote many scattered individual facts from all up and down the country and all over the economic field. Readers may find the tours from trade to trade and from county to county . . . . a little tiresome; but I do not know how to bring out the diversity of the national economic life otherwise."[1]

The concept of the quantitative method embodied in this passage explains our difficulties in dealing with the text. The statistician is called upon to supply vital data, which are used effectively in the correction of "legends" and in the revision of judgments on many questions of policy; but despite this use of statistics, the contacts with that subject are not developed and we are told that statisticians and historians must, after all, live in separate worlds. Professor Clapham reverts to a concept of bare geographic diversity as the basic fact in economic history.

[1] Edition of 1926, p. viii.

The dilemma created by this great refusal is effectively stated by Mr. T. H. Marshall:

> Dr. Clapham rejects the ordinary method of turning a heap of historical bricks into a house. He refuses to simplify or to generalize. Such devices must yield before his sternly quantitative appraisement of evidence. At the same time he claims that the world of the general historian is not that of the statistician, and he is not content to give summaries and averages. Nor will he unravel his subject and take it strand by strand, analysing the interplay of cause and effect, for that would be merely to write a collection of monographs. And so he has become a tourist, and no praise could be too high for the way he has presented his initial survey of Britain about the year 1820. Difficulties appear when the picture begins to change. A succession of almost static surveys of a wide and varied field possessing no obvious inherent principle of unity cannot convey a clear impression of motion. The passage from one diversity to another only bewilders. And it is the diversity, not the unity, of his subject that Professor Clapham wishes to emphasize. This problem of unity is crucial. The political historian finds it in his subject. The body politic has a head. Not so the body economic. The historian of art, selecting and appraising by standards that are not numerical, imposes a unity that might be called philosophical. The statistician, again, imposes a unity that is mathematical. The economic historian, as seen by Dr. Clapham, rejects all these aids to coherence.[4]

The point of view of the tour of England is too explicit to be missed, and the statistical analysis does tend to be essentially static; but there is an evident hope that the reader will in some way set the complex picture in motion and carry away a concept of a continuously developing activity embracing the entire nation. The misfortune lies in the fact that the quantitative method can itself furnish the means of setting the picture in motion, because it affords a series of concepts appropriate to the study of dynamic phenomena. Professor Clapham recognized clearly certain applications of the quantitative method that are of great importance for the revision of the judgments of the institutionalists; he failed fully to realize the significance of the quantitative method for the systematic presentation of economic history. He brings us to the verge of a new and hopeful development in method, but the accomplishment remains incomplete and indecisive. The interpretation of the period that is implicit in the text is not expressed in a

[4] T. H. Marshall, *op. cit.*, p. 624.

form that brings full enlightenment to the untrained reader or conviction to those who hold divergent views.

The primary cause of this indecisiveness is the evident conviction that problems of method and standards of valuation do not require explicit statement either in the text or in independent articles—a view shared by many. This belief is a survival of the essentially critical concept of historiography that dominated the mid-nineteenth century. There is some distrust, too, of the essay on method because the type fell into disrepute by reason of the unskilful treatment of methodology by the German historical schools. In England and the United States the conviction has grown that discussions of historical method are likely to be treated as substitutes for genuine historical work. We have assumed that no critical essays on problems of interpretation are really essential and that the primary general syntheses can be accomplished by broad general histories of particular countries or particular periods.

The fundamental error of this point of view is clearly demonstrated by Professor Clapham's volume. It lacks a compelling unity. In economic history there is no simple focus of attention as in political or constitutional history, and accordingly the structure of the narrative must rest upon some principle or convention. The author deliberately rejected the conventionalized centers of interest embodied in the phrases the "Industrial Revolution," the "factory system," and "capitalism." Had he not been too largely dominated by the purely critical concept of history, he would have realized the necessity of developing a system of valuation adequate to his problem instead of reverting to the point of view of the observant tourist engaged in the task of making a comprehensive description of British social life. This hypothetical tourist is, however, scarcely more than a device for the purposes of narration which does not really involve the absence of generalization that is alleged by various reviewers. Professor Clapham's reaction against current conventions involves important implications which appear in the body of the work in many ways, even though they are not explicitly developed as they might have been.

Deeply imbedded in the entire body of the text, one finds a few

primary judgments which involve a complete revision of all the basic valuations of the historical material. They indicate, beyond all possible doubt, the adoption of a concept of historical process that is wholly foreign to the thought of the institutionalists. This new point of view has not escaped the notice of reviewers, and there can thus be no ground for feeling that it is read into the text. Mr. T. H. Marshall says:

> Dr. Clapham's subject is the body economic of which he writes, as it were, biologically. He describes its organs, observes its growth, and records the changes in its structure. He steers clear, as far as possible, both of political and social history. The body economic has its own vital principle. It was not created by, and remains curiously unresponsive to, the acts of governments. It is strangely independent of the more vocal types of public opinion.[1]

This concept of society leads away from revolutionary or cataclysmic notions of social progress and emphasizes the continuity of social growth. It recognizes the basic importance of various objective conditions that are none too adequately embraced in the terms "physical resources," "topographic features," and "climate." If this doctrine were completely developed, technological improvement should be recognized as an independently conditioned factor, but this feature of the general concept is not fully treated in the present text. From this point of view, commerce is presented as a more important conditioning factor than industry. Finally, economic policy is presented as a phase of social adaptation rather than as an independently determined creative force. Study of policy therefore begins with objective social conditions, instead of beginning with various ideals that are to be imposed upon society to mold it into conformity with an abstractly conceived ideal. This concept of social development may be described as "dynamic adaptation." It may be contrasted with the concepts of "passive adaptation" held by many geographers who assume that social development is merely a reflection of the objective limitations of the environment. It may also be contrasted with the views of many institutionalists who hold that social life is dominated by the institutions created by business men, the policies of statesmen, and the ideals of reformers.

[1] *Ibid.*, p. 626.

Inasmuch as this interpretation diverges most sharply from the institutional point of view, it is not surprising to find that the most substantial review was that of Mr. J. L. Hammond, who published a brief review in the *Manchester Guardian* and later returned to the charge in the *Economic History Review*. Unfortunately, the issue was joined on the rather narrow problem of the extent and causes of discontent in the early nineteenth century rather than upon the basic matters of principle really at stake. The essential concepts are stated, however, with felicity. Mr. Hammond says:

> Nobody can write history without some background. To some minds the most moving and impressive aspect of the life of mankind is the history of man's relation with nature; the conquest of natural obstacles; the story of invention and organization. Others are more warmly interested in the story of man's relations with man, the problem of his social relations, the way in which he has struggled after the highest happiness, his attempt to find in one civilization after another the highest expression of his desires and his character. A man's studies as well as his temperament predispose him to one or the other of these enthusiasms. Sophocles, in his great chorus, described man the inventor and man the high-citied.[6]

No one would care to deny the importance of the social interests embodied in this concept of "man the high-citied," but it may well be doubted if the history of these interests and problems can be identified with economic history. No more adequate description of the basic problems of economic history can be given than this statement of the interests centering around "man the inventor." The other interests may perhaps be best described as social history. They are obviously related to economic history in many ways, but presentation of economic development from such a point of view can only result in serious distortion of all the values appropriate to the interpretation of the basic phenomena of economic history. The economist is primarily concerned with the study of the struggle for material existence. The use to be made of the individual life in spiritual and general intellectual interests is, after all, a separate subject of investigation.

One must, of course, recognize that the nature of the relation-

[6] J. L. Hammond, "The Industrial Revolution and Discontent," *Economic History Review*, II (1930), 220.

ships between material conditions and mental life is differently conceived by realists and idealists. The realist, to whom a concept of dynamic adaptation is congenial, is inclined to think of the ethical and intellectual interests as phases of relatively independent processes, involving contacts with the material problems of life but neither dominated by material circumstance nor capable of complete control of objective conditions. Idealists are inclined to assume closer relationships, and commonly present ideals as positive creative forces which dominate the entire movement of history. The crucial issue between these views is presented by the problems of innovation and invention. The inspirational or mystical concepts of invention have long afforded a basis for the idealistic interpretations of history. Latterly, considerable emphasis has been placed on the concept of invention as a relatively simple response to current needs.[7] Although there are elements of a notion of process involved, the stress upon the response to need distracts attention from the saltatory elements of invention and from the magnitude of the resistances encountered. Only the recent developments in psychology have placed the realist in a position to develop concepts of the process of invention consistent with his philosophy of history.[8]

Broad synthesis along the lines of realistic points of view has recently been made possible by these developments in psychology and the highly important developments in statistics. Better concepts of the process of innovation enable us to explain the nature of the dynamic elements in historical process; the new technique of statistics enables us to describe adequately the process of social growth as a continuously moving equilibrium. This development of statistical technique is an indispensable basis for effective presentation along realistic lines, and there are grounds for believing that the effective application of this new technique to analysis and presentation will decisively demonstrate the superiority of

[7] J. A. Hobson, *The Evolution of Modern Capitalism* (New York, 1930), p. 79. This notion developed out of Bennet Woodcroft's comments on the relations between the various textile inventions.

[8] J. Rossman, *Psychology of the Inventor* (Washington, D.C., 1931); A. P. Usher, *A History of Mechanical Inventions* (New York, 1929).

the realistic interpretation over idealistic interpretations of history. It is not too much to say that the realistic view, when fully developed, will constitute a broad synthesis that will include, in a slightly revised form, a large part of the analysis of institutional forms that has been the primary objective of the work of the institutionalists. The basic analysis of these functional problems is somewhat independent of the idealistic philosophy now commonly associated with it. Small revisions of statement remove all the implications of idealistic views.

As neither of these interpretations of economic history have well-established names or clearly defined principles, it will be desirable to indicate briefly the nature of the antithesis and the relation of these views to current literature.

The term "institutionalism" may be applied to the wide range of interpretations of economic history represented by the German historical schools, older and younger; the entire group of socialists; and the writers using some or all of the basic socialistic concepts. It must be confessed that the works of individual writers contain much that is inconsistent with their basic concepts, but these discordant elements have never been regarded as characteristic features of their thought. The most serious difficulties are presented by the evolutionary elements in Sombart's writing, which approach closely to the realistic point of view at many points. The primary objectives, however, remain idealistic, and the primary interests are definitely centered in institutions.

The essence of the doctrine lies in the conviction that certain institutions are an "end," or purpose, of the historical process. The nationalistic state and the socialistic state are thus presented as ultimate ends of historical process. They are taken to be the purpose which gives rational meaning to the course of history. This concept of the institution as the end leads inevitably to the notion that particular individuals or classes of individuals, or all the members of a society, may be legitimately required to make any sacrifice that is deemed likely to advance the cause. The realist holds that institutions are means to individual and social ends. They are a means of securing a more effective adaptation of social life to objective conditions.

The institutionalists have always attached great importance to "stages"; sequences of institutional forms arranged in an order that possesses some elements of logical succession and some relation to the chronology of history. These sequences of forms must needs play a part in any effective historical description of institutional life. They are necessary categories of reference. But none of the sequences developed by the institutionalists have the precise significance assigned to them in this scheme of interpretation. Broad periods of history cannot be characterized pertinently in terms of these sequences of forms because no precise chronological limits can be assigned that are consistent with all the facts. The nationalist concept of a movement from a town to a national economy does not admit of any precise treatment, because of elements of variation in different sections of the geographic areas involved. The concepts are too loosely conceived to possess much value. The sequence of industrial forms that now receives more attention possesses much more permanent significance, but these forms can be assigned valid chronological limits only for particular localities and for particular industries in those localities. Furthermore, there is no certainty that each form in the sequence will be represented in the history of any particular industry. In short, the permanent significance of this important analytical work diverges in many respects from the interpretations attached to these sequences by the institutionalists. The vague concept of a "capitalist" society involves too many complexities to permit adequate discussion. It is associated with various sequences of forms, and shares the elements of weakness common to all institutional generalizations of that order. A number of special problems are also involved.

In these schools, the movement of history is conceived as a sequence of revolutionary or cataclysmic changes. This emphasis on revolution is an inevitable result of the static descriptions of the institutional forms. There is no means of getting from one stage to another, save only through some break in the continuity of historical process. The state, through the instrumentality of a great leader or an oppressed class interferes by act of state or revolution and precipitates new social developments. In the later

historical periods, technological change is recognized as playing a vital part in the development, but these are assimilated to the theory of progress by revolution and are described as causes or factors in an industrial revolution, or a textile revolution, or a commercial revolution.

The institutionalists describe with varying degrees of felicity *what* happened. Their generalizations are thus especially suitable for broad sketches of economic development, and it is by no means a matter of chance that most of our current generalizations are the work of the various institutionalist schools. But these interpretations of economic history throw little light upon the nature of the historical process. They do not tell us *how* things happened, nor in any very accurate sense *when* they happened.

The realistic approach to economic history is profoundly different. The empirical recognition of an essentially continuous historical movement necessarily directs attention to the phase of the historical process that was least interesting to the institutionalist. The problem of ascertaining *how* things happened naturally becomes a basic question. Despite a certain amount of broad generalization along sociological lines, the realist has been confronted by serious difficulties of presentation. The feeling that he was under obligation to state the whole truth laid him under so heavy an obligation that he seldom had the courage to attempt broad general works. Some good manuals have been done from a realistic point of view, but scarce any full-scale period histories. Recent developments in statistics have provided in the concept of the secular trend a decisive solution for this crucial problem of presentation.

The secular trend supplies the realist with the focus of attention essential to any vigorous portrayal of the movement of economic phenomena. It imparts to a historical narrative the requisite unity without resort to any artificial device. Any time series will, of course, reveal some secular trend; but certain time series express comprehensively the general movement of the economic activities of particular areas or social groups, and they thus sum up concretely the economic life of society. Three classes of change are of basic importance; and if a combined secular trend were com-

puted, it might well be regarded as expressive of the general resultant of all the economic forces acting within the area. These fundamental factors are: changes in the mass of population, changes in the distribution and density of population, and changes in the standard of living expressed in the per capita consumption of the population.[9] It is important to observe also that the historian is concerned with the rates of change in these quantitative factors. We must think in terms of growth, and consequently comparisons must bear upon the rate of change and not upon absolute magnitudes. If graphic methods are employed, as is most convenient, the semi-logarithmic scale must be used. The arithmetical scale presents a picture that does not portray the "process of growth." The semi-logarithmic trend, on the other hand, may be taken to be a positive portrayal of the moving equilibrium of social life.

The primary task of the general economic historian is to establish the general characteristics of these basic secular trends and to furnish as substantial a commentary as is possible with the materials available. There is some division of labor between the statistician and the historian: the former is more largely interested in the short-run movements, especially the various seasonal and cyclical changes; the latter is primarily concerned with the broad movements over long periods of time. The historian is thus able to select his phenomena without injecting into the process of selection any elements of caprice or bias due to personal interests or emotional sympathy. The basic phenomena are chosen with reference to broad scientific claims to attention, and the material opens up fruitful contacts with economic theory and with the social sciences generally.

The commentary upon the secular trend must needs include discussion of all the qualitative changes both in technology and in institutions, as well as the quantitative significance of changes

[9] The measurement of price movements has attracted attention for fully two centuries, and many feel that such studies constitute one of the most important applications of the quantitative method of economic history. Despite the importance of such studies, they may be best regarded as part of the functional analysis of the institutional mechanism. The basic trends may best be conceived in terms of physical units.

in the utilization of natural resources. The scale of treatment of any period thus turns largely upon the elaboration of the commentary. A narrative on a large scale may possess just as definite a unity as the slightest sketch, and there need be no loss of proportion between the major and minor factors operating on the trend, for all of these relations may be subjected to a variety of quantitative tests. Historical realism, with a fully developed technique of quantitative presentation, thus lends itself to a wider variation in scale than the methods of the institutionalists. It is rather a pity that the implications of the method have not been more consciously recognized.

It may be objected that such a concept of quantitative methods cannot be applied to any long period of economic history because of insufficiencies in the available statistical material, and that the method is thus impractical. But while statistical data are less adequate for the earlier periods, we are entitled to say that the primary features of the movement of population can be established for large areas throughout the Christian Era and that a rough indication of the changes in per capita consumption can be secured for the major countries of Europe from the beginning of the sixteenth century.[10]

The use of statistical material that is essential to the application of the quantitative method would by no means convert our general economic history into a manual of statistics such as Porter's *Progress of the Nation*, though Clapham has clearly entertained a strong prejudice against the use of statistical material in tabular form. Analysis of the basic quantitative material serves merely to define the problems and the chronological limits appropriate to their treatment. It furnishes an objective standard of judgment for discrimination between the changes that dominate the growth of society and the changes that are conditioned by the development of basic resources and occupations. Without statistical control the timing of basic changes will be misjudged, and the

[10] A. P. Usher, "The History of Population and Settlement in Eurasia," *Geographical Review*, XX (January, 1930), 110–32; W. F. Willcox, "Increase in the Population of the Earth and of the Continents," *International Migrations*, Vol. II: *Interpretations* (New York: National Bureau of Economic Research, 1930), pp. 1–50.

significance of particular technological innovations is likely to be overemphasized.

The characteristics of the basic secular trends for England in the eighteenth and nineteenth centuries do not warrant any decisive break between 1740 and 1880. During this long period the various growth factors would conform closely to logistic formulas of the type computed by Raymond Pearl for population. Rates of growth are not absolutely uniform, but they disclose a regularity of progression that can express only the cumulative result of a definite group of factors. Historical treatment of such a period must needs involve some discussion of qualitative factors prior to the emergence of positive quantitative effects and likewise some analysis of the emergence of stabilization at the close of the period.

Although there are many grounds for feeling that it is unwise to divide the long period from 1700 to 1900, Professor Clapham has singled out the sole objective basis for such a division. The changes in the technique of inland transport give an absolutely distinct character to the economic history of the nineteenth century. Great reductions in the cost of transport gave new values to various material resources, opened up large markets in the interiors of all the newer continents, and changed decisively the balance between urban and rural forms of settlement. If the urban movement be taken as the simplest measure of this group of factors, the changes may be roughly identified with the nineteenth century, though the conspicuous movement to the towns certainly begins in England somewhat earlier than 1800.

As this urban movement has been closely associated with the development of transport, Professor Clapham has long had an especial interest in the canals and railways. In a number of respects, these interests are related to his realistic philosophy and to his acceptance of quantitative methods. The earlier institutional writing reduced commerce and transport to a very subordinate position. Industrial changes were deemed to be the basic feature of the new society, and improvements in transport were assumed to be an outcome of the attempt to find outlets for the increased volume of industrial products. Wider interest in the earlier history of "capitalism" led to more emphasis on commercial develop-

ment. This later position of the institutionalists is stated in a fairly representative fashion by the Hammonds. They recognize three successive "revolutions" in transport: a revolution in the fifteenth and sixteenth centuries which was "an essential preliminary to the industrial revolution of the eighteenth and nineteenth centuries"; a "second revolution" in the last half of the eighteenth century consisting primarily in the development of the canal system; finally, the railway. They conclude:

> Thus the textile revolution was effected in the age of canals. The change that was most directly encouraged in England by the railways was the development of engineering or the use of machines to make machines. . . . . Stephenson ran his first train in an England that had established its chief factory industry, made Liverpool more important than Bristol, redistributed its population, thrown up a new type of town and dissolved the present village.[11]

The passages are highly characteristic, and the full body of the text from which they are drawn is even more expressive of the general point of view. Apart from this series of "revolutions," which becomes so extensive that we are faced with a permanent condition of "revolution," there is an evident loss of interest in the subject as soon as a new institutional form has emerged. The impression might well be created in the reader's mind that nothing remained to happen but "normal "development of the new institutions. Professor Clapham's interests begin where the Hammonds' leave off. He is particularly concerned with the process by which these bare elements of a new society assume their mature and final form.

The entire change in the point of view is compressed into a single sentence: "At once effect and cause, railway development coincided with a development of metallurgy and mining quite without precedent" (p. 425). It is then shown that demand for railway iron was a basic factor in the increased volume of production and that these demands continued to increase decade after decade, further augmented by the general application of iron to shipbuilding. The demand for iron was also a demand for coal, and the transport services on land and sea were likewise responsi-

[11] J. L. and Barbara Hammond, *The Rise of Modern Industry* (New York and London, 1926), pp. 22, 77, 78, 79, 80.

ble for great increases in the consumption of fuel. The history of the heavy metal trades is thus closely interwoven with the rise of the railway. The influence of the railway on the progress of the urban movement is noted, but it is not developed in detail.

These reciprocal influences between industry and transport are inadequately recognized by the institutionalists, but the insufficiency of the institutional analysis is more sharply emphasized if another phase of the historical problem is considered. The localization of industry presents a number of interesting questions that seldom, if ever, receive much attention in the essays and sketches of the institutionalists. The movement of population from the southwest to the north is described in more or less detail, but little attention is given to the basic factors in the localization of industry. The significance of the coal fields is recognized, but without much realization of the complexity of the factors involved. It is primarily a quantitative problem and, as such, possessed little appeal to a group that was not drawn by necessity to the use of quantitative methods.

The theory of the localization of industry developed by Alfred Weber is based on the thesis that the best location will be determined by the locus of the point of minimum transport costs of all the materials used in the process of production or consumed by the laborers.[12] Taken in conjunction with the analysis of the economic geography of primary raw materials, this thesis leads us to a concept of the distribution of population that is primarily dependent upon costs of transport. The concrete patterns of settlement and the localization of the various occupations of the people are jointly determined by the technique of industrial production and by the technique of transport. Neither factor can be regarded as prior to or more important than the other. It is thus misleading to characterize the modern economic order as an "industrial" system. The technological developments extend over all fields of activity: industry, agriculture, and commerce; and it is hardly fe-

[12] Carl Joachim Friedrich (trans.), *Alfred Weber's Theory of the Location of Industries* (Chicago, 1929). Some special features in the broader applications of the theory are discussed in: A. P. Usher, "Comment se placent les usines. L'example des Etats Unis," *Annales d'histoire économique et sociale*, I (1929), 524–50.

licitous to classify all the innovations as "industrial." Effective analysis of the ultimate phenomena demands careful discrimination of the various types of change. These phases of economic history can be most readily handled by quantitative methods from a realistic point of view.

The destruction of various "legends" was a definite purpose in Professor Clapham's work; but though many revisions of judgment are to be found in the volume, only one of these revisions has been called in question by the reviewers. Mr. Hammond objects to Professor Clapham's contention that things were not getting steadily worse for the working man "down to some unspecified date between the drafting of the People's Charter and the Great Exhibition." Mr. Hammond objects to the characterization of this view as a legend and to Professor Clapham's interpretation of the facts. The pessimistic view of the period, he contends, was not an outgrowth of uncritical acceptance of inadequately grounded contemporary opinion. It was a scholarly interpretation of the period beginning with Arnold Toynbee. He cites with evident approval the following passage from Toynbee's lectures on the Industrial Revolution.

> There were dark patches, even in his [Adam Smith's] age, but we now approach a darker period—a period as disastrous and as terrible as any through which a nation ever passed; disastrous and terrible because side by side with a great increase of wealth was seen an enormous increase of pauperism; and production on a vast scale, the result of free competition, led to a rapid alienation of classes and to the degradation of a large body of producers.[13]

In concluding his discussion, Mr. Hammond recognized that "the Industrial Revolution increased wealth" and "made it easier to supply that economic minimum." But the changes did not "put the mass of the workers on a basis of security" and "did surprisingly little toward promoting the good life for the community at large."[14] At this stage of the discussion, he recognizes frankly that the discontent of the period must be interpreted as "a revolt of the imagination. . . . . It is the revolt of men and women who find for the first time that their poverty has a sting."

[13] J. L. Hammond, "The Industrial Revolution and Discontent," *Economic History Review*, II (1930), 215.

[14] *Ibid.*, p. 225.

This interpretation of the period would diverge in many respects from Professor Clapham's, but it would not be inconsistent with his facts. There were many respects in which the newer economic conditions inevitably led to discontent and class antagonism. But these aspects of Mr. Hammond's position are not really consistent with the direct criticism of Professor Clapham's analysis of agricultural wages in the earlier part of the article. In this connection the adequacy of Professor Clapham's evidence is challenged, but the criticism is not supported by any of the material brought forward by Mr. Hammond. He cites as authority for his view a passage from Lord Ernle's *English Farming, Past and Present*. The statements there made in regard to agricultural wages are based on Tooke and Young, and there is little real analysis in detail. One finds merely the categorical statement: "Even if wages had doubled, the price of provisions had trebled. In other words, effective earnings had diminished by a third."[15] For the statement about prices, no evidence whatever is brought forward, neither in that immediate connection nor apparently elsewhere.

Professor Clapham presents the general features of Bowley's study of wages in conjunction with the cost-of-living index prepared by Dr. N. J. Silberling. These are the most careful studies made of the elements of the problem, and must be regarded as close approximations to the best results that can be obtained with the material available to us. The price index is undoubtedly more satisfactory than the wage index and represents a very high standard of statistical scholarship. The highest relative in this index, 187 (1813) is only 2.2 times as great as the lowest relative prior to 1848, 85 (1785). There can be scarcely any possibility of producing statistical justification for Lord Ernle's unsupported statement that prices had trebled.

Unfortunately, this unscholarly citation of an unsupported statement is not the end of the matter. Professor Clapham is taken to task for failing to recognize adequately the limitations of his statistics, both in respect of the possible margins of error in the averages and in respect of the significance of the averages for an interpretation of the condition of England. Not only was Pro-

[15] *Ibid.*, p. 217.

fessor Clapham clearly conscious of these problems, but he also took into consideration the important factor of the actual earnings of the family as a whole. In a conclusion, to which Mr. Hammond makes no reference, Professor Clapham says:

> The conclusion of a difficult problem, which contains a number of doubtfully known quantities, is that whereas on the average the potential standard of comfort of an English (with Welsh) rural laboring family in 1824 was probably a trifle better than it had been in 1794, assuming equal regularity of work, there were important areas in which it was definitely worse, others in which it was probably worse, and many in which the change either way was imperceptible. In the bad areas the rates were drawn upon for the deficit.[16]

This is a very different judgment from the conclusion read by Mr. Hammond from the chart, which he described as: "A curve telling you that the average laborer added 1*s.* 11*d.* a week to his wage between 1795 and 1824 and then kept ahead of the rising curve of prices."[17] Mr. Hammond's criticism thus approaches perilously near the point of positive misrepresentation.

The broader concept of improvement in material conditions involves much more than this discussion of the movement of real wages. In its deeper implications the material well-being of the community may be measured most significantly in terms of vital standards. Whether we take the simpler measure of the expectation of life or the more complex measures afforded by the birth- and death-rates, there can now be no doubt of the magnitude of the improvements in vital conditions that began in the second half of the eighteenth century. The reference in the Preface to the more optimistic view of conditions now possible was undoubtedly intended to direct attention to this type of evidence. The primary features of recent studies of population are presented by Professor Clapham with shrewd judgment of the results now available. It is to be regretted that the full tables of birth- and death-rates were not given, though the omission is clearly due to an unwillingness to include statistical tables either in the texts or in notes. He summarizes the results thus:

[16] J. H. Clapham, *op. cit.*, p. 131.

[17] J. L. Hammond, "The Industrial Revolution and Discontent," *Economic History Review*, II (1930), 219.

> London might be honeycombed with cesspools and rank with city graveyards; but it was better to be born a Londoner than a Parisian, better to be born a Londoner of 1820 than a Londoner of 1760, and much better to be born an average Englishman than an average citizen of France, or of the almost completely rural Prussia of the 'twenties, if the goodness of life is to be measured by its probable length.[18]

The changes in the movement of birth- and death-rates were relatively complex, and graphic presentation would have been of great value to the average reader. The slightly adverse changes in the mid-nineteenth century deserve rather more attention than they receive in the text. They were due to the rapid increase in the mass of the urban population; and though substantial analysis is easily available in the notable studies of Mr. Griffith and Miss Buer,[19] the larger features might well have been included in such a general study. Such comment forms an indispensable part of the explanation of the primary features of the secular trend, and the reader should not be under obligation to turn to the special treatises for material of primary importance.

For general presentation, too, some use might be made of a composite index of vital conditions such as the formula suggested by Rubin.[20] He has suggested that the relative vital conditions at different dates or among various populations may be measured by the ratio between the square of the death-rate divided by the birth-rate d^2/b. Table I[21] shows the results of applying this formula to the figures available for England and Wales. Owing to the incomplete returns of births and deaths, figures prior to 1840 are no more than good estimates, but they doubtless indicate the approximate magnitude of these changes. Conditions from 1806 to 1826 were only slightly less favorable than they were at the close of that century, and not even the adverse factors of the mid-

[18] J. H. Clapham, *op. cit.*, p. 56.

[19] G. T. Griffith, *Population Problems of the Age of Malthus* (1926); M. C. Buer, *Health, Wealth, and Population in the Early Years of the Industrial Revolution* (1926).

[20] M. Rubin, "A Measure of Civilization," *Journal of the Royal Statistical Society*, LX (1897), 148–61; see also Alfredo Niceforo. *Les indices numériques de la civilization et du progrès* (Paris, 1921). It is not intended to suggest that such indices be interpreted as an absolute measure of progress, though they clearly afford a convenient measure of the net changes in the combined variables.

[21] G. T. Griffith, *op. cit.*, pp. 28, 36; M. C. Buer, *op. cit.*, p. 267.

nineteenth century carry the vital index below the level of 1796–1806, which represented a large advance over any part of the eighteenth century.

TABLE I

VITAL CONDITIONS IN ENGLAND AND WALES

Year or Period Year	Births per 1,000 Living (Griffith)	Deaths per 1,000 Living (Griffith)	Deaths per 1,000 Living (Buer)	Vital Index (d^2/b)
Year:				
1700.....	31.1	26.0	.....	21.8
1710.....	27.5	26.7	.....	26.0
1720.....	30.5	29.7	.....	28.6
1730.....	32.0	33.4	.....	34.6
1740.....	33.3	31.7	.....	30.2
1750.....	34.1	28.2	35	23.5
1760.....	33.3	26.7	.....	21.5
1770.....	34.0	27.9	.....	23.0
1780.....	34.4	28.8	28	25.8
Average of years:				
1785–95.....	35.44	25.65	.....	18.7
1796–1806..	34.23	23.14	(1800) 25	15.5
1806–16....	33.84	19.98	(1815) 20	11.7
1816–26....	33.39	20.33	(1825) 21.5	12.9
1826–36....	32.36	21.65	.....	14.5
1836–46....	31.43	20.80	.....	13.8
1851–60....	34.13	22.23	.....	14.5
(1861–70)....	.....	.....	.....	.....
1871–80....	35.42	21.38	.....	12.9
(1881–90)....	.....	.....	.....	.....
1891–1900..	29.87	18.21	.....	11.3

TABLE II

VITAL CONDITIONS IN VARIOUS COUNTRIES

(Average Vital Indices [d^2/b] for Periods Indicated)

Country	1801–10	1841–50	1881–90	1906–10
Sweden.....	25.3	13.7	9.8	8.2
Norway.....	23.5	10.8	9.4	7.2
Denmark.....	18.1	13.8	10.8	6.7
Holland.....	.....	20.8	12.9	7.1
Germany.....	.....	19.9	17.2	9.9
England and Wales.....	.....	15.4	11.2	8.2

Comparisons with foreign countries shown in Table II may add somewhat to the significance of the range in the index. There is reason to presume that the great improvement in vital conditions was advancing as rapidly in England as in any part of

Europe. More favorable conditions were to be found only in those northern countries whose population was living predominantly in rural districts. One must recognize, of course, that such measures of economic conditions are indices only of the broadest features of the basic long-run tendencies. A variety of vicissitudes must not be ignored; but even when all allowances have been made, it becomes evident that the net result of the changes in the period 1760 to 1850 was essentially favorable to the primary economic interests of the mass of the population.

In dealing with the problems of economic statecraft, Professor Clapham refuses to accept the view that the government consciously adopted a thoroughgoing policy of laissez faire.

> Thinkers among the parliamentarians of the 'twenties were coming steadily under the influence of the economists. Lord Liverpool knew his "duty" in fiscal matters but regretted his inability to perform it . . . . even the economists were cautious; and to other questions connected, or believed to be connected, with national power there was a general reluctance to apply a too strict economic argumentation. . . . . Certainly there was not much dogmatic objection to interference in the mind of the average legislator. Spasmodic abandonments of regulative legislation—from that of the apprenticeship law to that of the Spitalfields Act and the combination laws—had been due more to lack of constructive ideas for dealing with the various problems as they arose, and to lack of administrative machinery adequate to enforce even such regulative legislation as survived, than to reasoned preference for so-called economic freedom [pp. 335–36].

This judgment of the temper of the period diverges, of course, widely from the interpretations to be found in the writings of the Webbs, the Hammonds, and many institutionalists. Although Professor Clapham holds to his point of view consistently throughout his text, some of the reviews do not seem to associate these judgments with an organized interpretation. In this instance, as in others, the implications of Professor Clapham's approach are not fully apprehended, and in the present state of the literature these difficulties can be readily understood.

Problems of economic statecraft have commonly been approached from an idealistic point of view. The various policies are classified according to a characteristic doctrine—mercantilism, protectionism, laissez faire, socialism—and the historian de-

fends the statesman with whose views he sympathizes. The realistic point of view makes the problem more complex. No single end can serve as a unifying element. The activities of the statesmen are conceived as being primarily adaptive. The implications of a concept of statecraft as conscious social adaptation have never been fully discussed. So that there is little knowledge either of the general concept or of the process of transition from custom to the conscious adaptation of social institutions to objective conditions. Large elements of empiricism may appear in economic policy at all times; and until the nineteenth century, economic statecraft was really dominated by tradition and empiricism. Only within very narrowly restricted fields was there any attempt at the conscious analysis of problems of economic policy. Laws and ordinances were statements of traditions that were presumed to be established. Old principles might be extended to a new sphere, but even as powerful a personality as Elizabeth's Lord Burghley did not attempt more than such redefinition and interpretation of the established customs. When Sir Thomas More conceived of a systematic reorganization of society, he was quick to characterize the notion as "utopian." If we distinguish between various policies and the reasons given in their defense, it is safe to say that substantive economic policies were dominated by tradition down to the close of the eighteenth century. With the exception of Colbert and Cromwell, we find little economic statesmanship consciously directed toward defined objectives before the generation of Adam Smith and Turgot.

The work of the idealists is well known, but it is not as generally recognized that the building of these new ideals into organized social life involved not only the resistances due to the imperfect administrative organization of the state but also the serious imperfections in the analysis of the explicit consequences of the various abstract principles. English statesmen of the early nineteenth century worked along two broadly conceived lines. In a wide range of activities the individual was given greater freedom of action than he had legally enjoyed in the past. Over a large field of social interest new administrative authority was assumed by the central government which inevitably restricted individual

freedom and ultimately curtailed many proprietary interests. The general tendencies in public policy were thus inconsistent, if viewed from a narrow logical point of view. No single group of idealists was ever really satisfied with the course of public policy, and both were ready to criticize the governments of their day. The statesmen of the time chose a middle course between the individualism of Spencer and the collectivism of Robert Owen.

Beyond any possible doubt the foundations of an essentially new society were laid in the period that elapsed between Pitt's reorganization of the customs administration and the repeal of the Corn Laws. Whether these generations did well or ill must rest on the judgment we form of the magnitude of the resistances they encountered. On such an issue, the idealist is likely to minimize the actual obstacles to constructive accomplishment; whereas the realist is perhaps too complacent in his recognition of the reality of the "solid ignorant gentlemanly vote" that lay between Lord Liverpool and the accomplishment of his duty. But even when passion and prejudice were not deeply involved and powerful economic interests were arrayed on both sides, as in the case of the Bank of England, progress toward a mature policy was slow. The objective resistances are at all times considerable. Selections must be made among conflicting recommendations of experts and idealists; and in making these choices, the statesman can follow no single ideal. The vague concept of general welfare is the only guide, and the claims of both the immediate present and the future must needs be recognized.

Professor Clapham expresses the judgment of the realist with felicity:

> There is a limit—very soon reached—to the amount of workman-like creative legislation or administration of which any government is capable in a given time. There was no limit on the call on creative ability in a nation barely recovered from twenty-two years of war, shaken by ill-comprehended economic change, and bewildered by a growth in its own numbers without precedent in history. Judged as governments are entitled to be judged, not by what proved practicable in a later and more experienced day, nor by what reformers and poets dreamed and were not called upon to accomplish, but by the achievement of other governments in their own day, that of

Britain in the late 'twenties of the nineteenth century makes a creditable showing [p. 316].

Professor Clapham is thus not merely giving us a large-scale history of an important period; he is demonstrating for us a method and point of view that are still unfamiliar though they are not entirely new. The quantitative method is imperfectly understood. The full implications of historical realism are even less adequately appreciated. Many readers have been slow to perceive the full significance of this commanding volume. Professor Clapham might have made it easier for them to grasp the full context of his mind by explaining his purposes and principles in a little more detail in an introductory chapter or appendix. But these problems of method are complex, and one may well hesitate to attempt comprehensive formulation. Furthermore, many of these critical problems are common to the whole field of economic history. The categories of reference for the description of institutions should be expressed in broad terms that are applicable to the whole of the historical period. No author would feel entitled to include such material in the general history of a period. The concept of scientific realism in the field of history is also in need of further discussion, as there is a disposition to deny the possibility of achieving scientific objectivity outside the field of space relationships. In short, there clearly is need of not a little broad synthesis in the form of critical essays on the implications of the various methods applicable to economic history. Such essays could not take the place of the full-scale histories of periods such as Professor Clapham's, but they would make the significance of such works clearer to the general body of readers. Economic history must needs be more than an objective record of events. It involves a philosophy of life; and any given work, if it is to be fully appreciated, must be read with a conscious knowledge of the philosophy upon which it is based.

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THE UNEMPLOYMENT PROBLEM IN AUSTRALIA

I

THE world-slump of 1929–31 brought to Australia economic difficulties more acute than any experienced since the federation of the states, and comparable with, if not worse than, those that accompanied the crises of 1843 and 1893. In the forefront of these difficulties is heavy unemployment, which, according to trade-union returns, embraces over one-quarter of their membership. This high figure, however, is not to be attributed solely to the violence of the Australian financial crisis, for even before the latter had begun, unemployment had already reached such a level as would formerly have been regarded as characteristic of a depression. The average percentage of unemployed trade-unionists for the post-war period, excluding 1929–31, was 8.4 per cent; while the highest figure for the years 1906–13 was only 7.3 per cent. In the post-war period the percentage dropped below the pre-war maximum in only eight quarters out of forty, and to the pre-war average but once. The conclusion is ineluctable that this "new" country must be grouped among the nations, such as Great Britain, Germany, and the United States, that have experienced a considerable post-war increase in unemployment. There is little hope that recovery from the present crisis will in itself bring alleviation of these factors, whatever they may be, which are responsible for this persistently high *normal level* of unemployment. What are the major causes of this high level in Australia?

A useful approach to this problem is through a comparison of different industries. Inquiries in other countries have shown that the total figures of unemployment, like most statistical aggregates, hide the significant differences that do exist among the component industries.[1] Another good reason for considering Australian industries separately is that the available statistics are

[1] See Lazard, *Le chômage et la profession;* Clay, *The Post War Unemployment Problem.*

better suited to such a study than to an estimate of the aggregate volume of unemployment. Although the trade-union returns are based upon about one-third of the nation's employees, they present an inadequate sample in that not all branches of industry, agriculture, and commerce are included. It is not surprising that critics have found certain divergences between these figures and such other independent estimates of unemployment for the whole of industry as are occasionally available.[2] The industries included in the statistics differ among themselves, and it is only to be expected that those which are omitted will vary somewhat independently, too. Consequently, the official statistics cannot pretend to measure accurately the total volume of unemployment. But the trade-union returns are quite useful for a comparative study of particular industries, and they are not so inadequate as to cast doubts upon the view that there has been a considerable post-war increase in unemployment.

Fourteen industrial groups are distinguished in Australian labor statistics, but unemployment figures are available for only nine of these. Either the others are excluded altogether or they are combined into a tenth group, known as "other and miscellaneous" and so too vague in its content to have any theoretical interest. The relative strength of the nine groups and the adequacy of the sample on which the figures are based may be gathered from Table I. The composition of the groups is in most cases indicated sufficiently by their names; one or two comments, however, are called for. The group "wood, furniture, etc." covers saw mills and timber yards, and is thus connected with building materials, but, in addition, it includes a diversified range of trades. Here are wire-mattress-makers and organ-builders, carpet-cutters and coffin-makers, the picture-framing industry and piano manufacturing. Under "furniture" comes a host of different trades, such as wood-carvers, turners, upholsterers, French polishers, drape-cutters, and bedding-makers. The "engineering" group, although devoted mostly to the production of machinery and equipment for industry, produces also such things as iron bedsteads and

[2] E.g., the census of 1921, and the Queensland unemployed insurance statistics. Cf. Gifford, *Economic Statistics for Australian Arbitrations Courts.*

ovens. "Other manufacturing" is an almost incredibly diversified group. Alphabetically, its components range from the half-dozen occupations involved in asphalting to the three included in wicker-working. It includes coach-building and candle-making, the gas industry and shipbuilding, masons and opticians, soap-makers and rubber-workers, manufacturers of artificial manure and tent-makers. So varied are these trades that the study of such a group would not be worth while were it not for the interesting fact that

TABLE I

THE NUMERICAL STRENGTH OF TRADE-UNIONS AND THE BASIS OF UNEMPLOYMENT RETURNS

INDUSTRIAL GROUP	1913		1928	
	Total Membership	Members Covered by Unemployment Returns	Total Membership	Members Covered by Unemployment Returns
1. Wood, furniture, etc.	19,913	17,904	35,740	21,019
2. Engineering, metals, etc.	39,145	29,641	87,417	80,441
3. Food, drink, and tobacco	33,372	21,859	71,994	32,320
4. Clothing, hats, boots, etc.	18,217	16,126	56,874	38,010
5. Books, printing, etc.	9,318	8,137	19,771	19,414
6. Other manufacturing	27,010	21,307	46,779	39,006
7. Building	31,544	25,282	60,416	53,876
8. Mining	40,449	24,605	43,044	29,000
9. Other land transport	18,369	13,719	20,632	16,761
10. All groups, including some industries not listed	497,925	237,206	911,541	423,422

in these types of industries there has been a rapid growth of small firms in recent years. The last group, "other land transport," derives its title from the fact that railways and tramways form one of the industries for which no unemployment returns are made, since "employment is usually stable" in those services. "Other land transport" comprises motor busses, conveyance of goods in lorries and drays, and elevator driving.

It is clear that with such broad groupings of industries, it is impossible to make a complete comparison between unemployment and technical conditions in different trades. Nevertheless, each group possesses individuality, if not unity, for the level of unemployment is considerably higher in some than in others, in

good years and bad. In the next section the most significant differences among these groups will be statistically summarized and their theoretical significance considered.

II

An obvious but important distinction must be made between the normal level of unemployment, and the range of fluctuations. Indeed, for many purposes, fluctuations are best regarded as positive and negative deviations from the normal level.[3] The

TABLE II

THE NORMAL LEVELS OF UNEMPLOYMENT AND THE AMPLITUDE OF FLUCTUATIONS

INDUSTRIAL GROUP	AVERAGE PERCENTAGE OF UNEMPLOYED		STANDARD DEVIATION FROM THE AVERAGE	
	1914–19	1920–28	1914–19	1920–28
1. Wood, furniture, etc.	6.6	5.9	4.0	3.7
2. Engineering, metals, etc.	6.6	9.5	2.3	4.4
3. Food, drink, and tobacco	9.1	10.8	3.5	3.1
4. Clothing, hats, boots, etc.	6.4	5.6	3.3	3.1
5. Books, printing, etc.	3.7	2.1	1.3	0.7
6. Other manufacturing	6.4	12.4	2.0	4.3
7. Building	7.8	5.8	4.0	2.7
8. Mining	8.7	10.9	2.7	4.5
9. Other land transport	3.3	5.4	1.1	2.0

latter can be measured by the average over a given period of time, unless a definite changing trend is observable; and the degree of fluctuation can be measured by the normal dispersion of the actual figures about the average. The most suitable measure of dispersion is the mean square deviation, or standard deviation. Table II shows the average percentage of unemployment and the standard deviation from the average, in the nine industrial groups, for the war years and for the post-war period to 1928. The crisis years of 1929–31 are not included, since they would distort both the average and the standard deviation. Accordingly, the measures refer to the normal levels of unemployment and the amplitude of its fluctuations only in the specified periods. Unfortunately, we have no figures, by industries, for the pre-war years.

[3] The word "normal" is used throughout in the statistical sense of "typical."

Nevertheless, the transition from war to peace should have produced some changes which might throw light upon the factors at work in various industries and which should be capable of explanation in terms of the theory of unemployment.

Consider, first, the normal level of unemployment. The averages for the war years are grouped fairly symmetrically about 6.4 per cent; but there is a considerable range between the highest and the lowest group, and it is clear that the differences among the industries are significant. Such a contrast, for example, as that between "food, drink, and tobacco," on the one hand, and "other land transport" on the other, is challenging. But even more striking is the changed distribution of the industries that followed the coming of peace. There was not a universal increase in unemployment, for in no less than four industries the average for the post-war years is lower. The fall was absolutely greatest in building, but was relatively greatest in printing. Among the industries which have had a higher normal level since the war, "other manufacturing" is foremost; while "food, drink, and tobacco" shows but a small increase. The importance of dissecting the unemployment figures into industrial groups is now plain. If all industries had fared as badly as "other manufacturing," the general situation would be considerably worse than it is.

In the case of building, special circumstances were attendant upon the restoration of peace. Building was stagnant during the war, not only because of the general tendency to spend less upon capital goods, but because the operations of Fair Rents Acts in a period of rising costs reduced builders' profits considerably. But the return of peace placed the nation under the necessity of making up arrears; and, moreover, the rapid increase of population had to be housed. It is noteworthy that the lowest unemployment figures in building were recorded in the period 1919–24 and that since then unemployment has increased, although not until recently has it reached heights similar to those attained during the war. One is tempted to seek a similar explanation of the decline in unemployment in printing, for here, too, there came a considerable reaction from war conditions, and the development of modern advertising has tended to assist the expansion of the

industry. But this is not the whole story, for activity in printing has not only expanded in volume but has gained perceptibly in stability.

Indeed, in each of the four industries, in which the normal level of unemployment has been lower since the end of the war, the amplitude of fluctuations, as measured by the standard deviation, has diminished. And of the five industries in which the normal level has risen, only one—"food, drink, and tobacco"—has experienced a diminution in the standard deviation. Apart from this exception, even the magnitudes of the changes in the normal level are correlated quite closely with the magnitudes of the changes in the standard deviations. This finding agrees well with the theory that the normal "reserve" of labor depends largely upon the degree of variability in the demand for labor. The relationship is almost as well demonstrated if we consider, not the change from one period to the next, but the absolute differences among the industries in the post-war period. The three least stable industries—mining, engineering, and "other manufacturing"—rank among the four with the highest normal levels of unemployment; and the three most stable industries—printing, "other land transport," and building—have comparatively low levels of unemployment. It is true that clothing and "food, drink, and tobacco" appear to present negative cases, for, while these two industries have the same standard deviation, the latter has the higher normal level. But an examination of the actual quarterly figures suggests an explanation for this, for although the standard deviation is the same for both industries, the fluctuations are somewhat different in type. As compared with the clothing industries, "food, drink, and tobacco" would appear to be less subject to large fluctuations, such as that in 1920–21, but more prone to short-period oscillations. Since the standard deviation gives more weight to great departures from the average, the equivalence of the measure in these two industries must be interpreted to mean that in comparatively normal times, "food, drink, and tobacco" is the more unstable. We noticed, above, that this industry is the only exception to the rule that the post-war increase in the normal level of unemployment is associated with an increase in

the standard deviation. In fact, the war-time fluctuations in this industrial group consisted of considerable disturbances, lasting for some time and tending, because of their amplitude, to affect the standard deviation considerably. On the other hand, the post-war years have been more subject to short-term oscillations. Thus, consideration of these apparent exceptions does not lead us to reject the view that the normal level of unemployment is a function of instability, but suggests that it is determined by the short-period oscillations rather than by major disturbances. This is consistent with theory, for, while major fluctuations cause heavy unemployment during the period of depression, they need not involve a comparatively high normal rate, since the return of good years reduces the number of unemployed to relatively small proportions. But when an industry is subject to an intermittency that involves severe short-term oscillations in the demand for labor, a "reserve" of labor is inevitably accumulated, and the normal or average rate of unemployment over good and bad years tends to be relatively high. It is important to bear in mind that the period under consideration excludes the slump of 1929–31 and that the world-crisis of 1921 was not felt as strongly in Australia as in most countries. Consequently, the standard deviation for the post-war years relates to the amplitude of short-period variations rather than the amplitude of major fluctuations. It is significant that the relation between the standard deviation and the normal rate of unemployment is more marked in this post-war period than during the war, when labor conditions were more artificial.

The existence of this close statistical relationship, and its consistency with theory, might tempt one to regard the Australian unemployment problem primarily as one of instability and to attribute the post-war increase to the greater instability of particular industries. But to claim that our statistical comparisons *prove* this thesis would be to place too much reliance upon the method of concomitant variations, especially as alternative explanations of the post-war increase are offered, which appear equally coherent and logical in theory and which find some support in the statistics of unemployment in other countries. For ex-

ample, the post-war increase in Great Britain is attributed to "the maldistribution of labor brought about by the war"[4] and to "the maintenance of rates of real wages above the level that would establish equilibrium between the demand for, and the supply of, labor."[5] It is interesting to inquire whether the available statistics would support the position that these two factors are dominant in the Australian problem.

The distribution of labor among different industries presents a different problem in Australia from that of Great Britain, because the total Australian population is increasing rapidly. Reference to Table I will show that in most of the industrial groups there has been considerable expansion since 1913. One exception is mining, and it is now recognized that the coal industry is considerably overstaffed.[6] Even before the 1929–31 crisis it had been estimated that at least five thousand miners could not hope to be reabsorbed in this industry. This is a clear case of maldistribution of labor, and there is no doubt that the post-war increase of unemployment in mining is largely due to the secular changes that have occurred in the demand for Australian coal. Another industrial group that has not grown considerably in numbers during the period under consideration is "other land transport." In this case the post-war years have seen a small increase in the normal level of unemployment; but even then, the rate has not been very high. This industry has experienced a considerable development of mechanical devices; and although strings of horse-drawn drays, each driven by a man, are still to be seen in connection with some constructional works, the general tendency is to substitute huge motor lorries. It is possible, then, despite the growth in the quantity of goods and passengers transported, that the industry may be slightly overstaffed. But the case is not nearly as clear as that of mining.

It is extremely difficult to ascertain whether there has been maldistribution of labor in the other industries. The mere fact that these seven groups have all experienced a rapid growth in

[4] Clay, *Economic Journal*, March, 1928, p. 14.

[5] Pigou, *ibid.*, September, 1927, p. 356.

[6] See Mauldon, *The Economics of Australian Coal*, chap. vii.

numerical strength does not exclude the possibility of unbalanced development and of maldistribution of labor. One can only point out that the growth of unemployment in these industries, considered comparatively, is neither directly nor conversely correlated with the increase of numbers. Thus it would seem that our statistical comparisons do not support the view that the maldistribution of labor is an important factor in the Australian unemployment problem, except in the case of mining, and possibly (though this is less certain) in "other land transport." This finding is not surprising, for the concept of the maldistribution is strictly relative to the available markets, and mining is the only one of these nine industries that has had a considerable export trade. The others meet competition only in the home market; and when foreign competition threatens to make necessary a redistribution of labor and capital, the situation can be met by tariff policy. It is true that this has led to a more rapid development of manufacturing as contrasted with primary production, and there may have been maldistribution of labor as between these two great divisions. But a comparatively plastic tariff (in an upward direction) minimizes the effects upon employment of conditions that might call for a redistribution of labor among the protected industries.

What of wage policy? Nominal rates had advanced considerably by the end of the war; but it was not until 1921 that real wages, according to the Commonwealth Statistician, reached a level similar to that attained in 1911, which was the peak year of the immediate pre-war period. Since 1921 the average real wage (making no allowance for lost time) has varied from 7 to 12 per cent above the 1911 level. This increase in real wages, however, was uneven in its incidence, and workers in some industries gained considerably more than others. Accordingly, before we regard the rise in general wages and the increase in the general level of unemployment as causally connected, we should consider the relationship between the incidence of both these changes in different industries. The average money wage-rates for male employees in these nine industries at the end of the period under consideration is shown in Table III, together with an index of the proportionate

increase since 1911. (The weighted average for the whole of industry includes certain other industries in addition to our nine groups.) Examination of this table shows that, although in some cases a high level of unemployment is associated with high wages and with a considerable increase in wages, it is associated in other cases with low wages. Conversely, printing, with the lowest level of unemployment and a post-war decline in the normal level, has the highest wage-rates and has experienced the greatest increase in wages since 1911. If the nine industries are ranked in order,

TABLE III

WAGE-RATES

Industrial Group	Wage-Rates, December, 1928 (Shillings per Week)	Index Relative to Rates in 1911 = 1,000
1. Wood, furniture, etc.	103/11	2,028
2. Engineering, metals, etc.	102/1	1,993
3. Food, drink, and tobacco	99/9	1,947
4. Clothing, hats, boots, etc.	99/4	1,939
5. Books, printing, etc.	117/10	2,299
6. Other manufacturing	100/8	1,964
7. Building	112/4	2,191
8. Mining	109/1	2,143
9. Other land transport	96/3	1,978
10. All groups, including some not listed, weighted average	100/5	1,955

according to both the post-war level of unemployment and the post-war increase in wages, the coefficient of correlation is −.05. In other words, the statistics offer no positive evidence of a causal relationship between these two characteristics. It is possible that in some, or even all, industries wage-rates were "above the level that would establish equilibrium between the demand for and the supply of labor," our statistical comparisons do not disprove this view, even though they do not support it, either. But they do illustrate the fact that this concept of an "equilibrium level" of wages is extremely difficult of application in concrete instances. The equilibrium of the supply of, and the demand for, labor demands a peculiar relationship among wage-rates, "other costs of production," and the volume of consumers' demand for the

products of labor, which is not easily formulated in concrete terms. Probably the most satisfying statistical approach to this problem would be to compare the level of unemployment in our nine industrial groups with the proportion of wages to the value of produce sold. But unfortunately, such a comparison is not possible in Australia until the industrial classification of statistics for figures of wages, employment, and production has been standardized.

Limiting ourselves to the statistics presented in this paper, we find that a comparison of different industries supports the view that the level of unemployment is a function of instability but provides neither positive evidence that wage policy is responsible for the post-war increase in unemployment nor grounds for believing that maldistribution of labor is an important factor except in the mining industry. It may be objected that oscillations in the demand for labor need not lead to unemplyoment, if wages were sufficiently plastic. But the oscillations that appear to be closely associated with a high normal level of unemployment are so short in duration, and often so unpredictable, that the wage plasticity required to keep the demand for labor steady would be of an impossible order. Even if wage changes could be made frequently enough, it is impossible to determine the elasticity of demand for labor at a particular moment, and it would be accordingly impossible to decide, a priori, the magnitude of the wage reduction required. Advocates of greater wage plasticity do not usually ask for perfect plasticity over short periods, but for variations in rates whenever there is a definite and considerable alteration in the demand for labor. Since our statistical comparisons suggest that the growth of unemployment has been more closely associated with short-period instability than with changes in wage-rates, it would seem likely that, even if wages were made reasonably plastic, the continuance of these minor oscillations would still be accompanied by a high normal level of unemployment. In February, 1931, the Commonwealth Arbitration Court reduced the basic real wage (for unskilled labor) by 10 per cent; and this, superimposed upon an automatic reduction for the fall in the cost of living, involved a total reduction of 23 per cent in

the nominal wage-rate. The cut in the real wage was an emergency measure, rendered necessary, in the opinion of the court, by the general economic situation of the country, and is a good example of that type of plasticity in wage-rates which many economists have advocated. Now, if the post-war increase in unemployment has been due to the maintenance of real wages "above the level that would establish equilibrium between the demand for, and the supply of, labor," the court would be well advised to retain this emergency measure after the emergency has passed, that is, to keep the basic real wage at its new lower level, even when prosperity returns to Australian industry. But if, as these statistical comparisons suggest, the instability characteristic of Australian manufacturing is a more important factor in the unemployment problem, the results of a lower-wages policy, unless accompanied by a reduction in short-period fluctuations, are bound to be disappointing.

The close relationship between instability and the normal level of unemployment has an important bearing upon another branch of economic policy. In the past, Australian governments have attempted to meet the unemployment problem by "creating employment," for example, by tariff protection to manufactures, by bounties, and by public works. Apparently no consideration has been given to the question of whether the employment thus provided is intermittent or stable. To build up manufacturing industries may be "to create employment"; but so long as these industries are characterized by instability, such a policy cannot possibly "absorb the unemployed" continuously. A glaring example of public assistance to an intermittent industry is the case of sugar, for not only has the protection of this industry cost the Australian consumer some £2,000,000 annually but the industry has made heavy calls upon the Queensland Unemployed Insurance Fund. In recent years, before the 1929–31 crisis, this industry supplied one of the largest groups of workers seeking maintenance allowances. Nor is the employment offered by public works stable. The state of Western Australia does claim that attempts have been made to allocate expenditure on public works so as to counteract the seasonal unemployment of the period May to

September each year; but according to an inquiry made in 1929, it appears that no other Australian government had explored the possibility of adjusting public orders to slack times or even of avoiding fluctuations in expenditure on works. The heights of achievement are apparently "to expedite the putting in hand of public works by providing special votes to be expended on relief works. The necessity for such action is generally brought under the notice of the governments by deputations representing the unemployed."[7] A spasmodic and unplanned public-works policy is not only unsatisfactory in itself but increases the instability of the secondary employment "created" by the demand of those employed on the works. In a young and rapidly developing country, the reduction of unemployment is not simply a problem of increasing the opportunities for employment. Unless the new employment "created" by developmental policies can be stabilized, the normal percentage of unemployment is not likely to be diminished permanently.

III

Some of the factors making for instability are peculiar to certain industrial groups and find their origin in the nature of the demand for the products of these industries or in the conditions of supply. An obvious cause of intermittency is seasonal variations; and in both clothing and food, drink and tobacco, this factor is dominant the world over. It will be remembered that in the post-war period both industries had a considerable, though not extremely great, standard deviation (Table II). On the other hand, it is significant that the building industry, with a comparatively low standard deviation since the war, is not subject to great seasonal variations in Australia, where winter weather is not as unfavorable to construction as in such countries as Great Britain and Germany.

But it is clear that seasonal variations are only one factor in instability. The least-stable industries are mining, engineering, and "other manufacturing." The intermittency of employment in coal-mining is an international feature of the industry. In New

[7] *Commonwealth Year Book*, 1929, p. 567.

South Wales the average working year in 1927 consisted of 189 days, which is not less than the normal working year in the coal industry of the United States. While a considerable portion of the idle period is the result of industrial disputes, yet slackness of trade and technical causes cause unemployment in all mining countries. Intermittency of production has undoubtedly been intensified in Australia by the keenness of competition in the face of a declining external market. And the scramble for trade has probably contributed to the instability of the engineering and "other manufacturing" industries. Both these groups have received tariff protection increasingly since the war, and in both there has been a rapid growth of small mushroom firms, which growth has attracted the attention of several observers. It is well known that a multiplicity of firms gives greater scope for the type of error commonly known as the "competitive illusion," and it is inevitable that the inexperience of many of these small establishments should foster errors of judgment which add to the instability of the demand for labor. It is somewhat ironical that a tariff, designed to create opportunities for employment, should actually facilitate the organization of certain industries along lines that reduce the probability of permanent employment for the average worker.

In striking contrast to these industries is printing, which has offered remarkably steady employment since the war. This is not to be explained merely by classifying printing among consumers' goods trades, as contrasted with engineering or constructional trades, for printing today is largely concerned with commercial work, especially in Australia, where the reading public is too small to "consume" a large output of books. In any case, printing is more stable than other consumers' goods trades, such as "food, drink, and tobacco." The explanation of the stability of the demand for labor lies partly in the intensive mechanization of the industry. Variations in output need to be greater in printing than in most other trades, before it becomes worth while to vary the size of the pay-roll. Moreover, the supply of labor is better organized than in most Australian industries, for the printing-trades unions promptly advertise to their members the fact that unem-

ployment exists in a particular district. Consequently, a smaller labor reserve is accumulated.

But it is impossible to arrive at a complete and satisfying explanation of the causes determining the degree of instability in each industry without making separate exhaustive studies. Little consideration is needed to show that the factors making for instability vary considerably from industry to industry, but their exact determination must await more detailed investigation.

IV

The preceding discussion has dealt only with those features of the unemployment problem which were present in Australia before 1929 and which, in all probability, will continue to be prominent when the present crisis has passed. It is not proposed to consider here the peculiar problems of 1929–31 in any detail, for these are largely questions of public finance and monetary policy; but one or two questions may be discussed which are closely related to the earlier sections of this article. In February, 1929, the official returns showed 9.3 per cent of trade-unionists unemployed. In February, 1931, this figure had risen to 25.8 per cent. How has the incidence of this heavy unemployment fallen among the various industries, and what relation has its incidence to their normal levels of unemployment and to their previous instability? Table IV presents an answer to these questions. The actual percentages unemployed in each quarter of the two years show how some industries have fared differently from the others. Certain of these differences are summarized in the last two columns. In the first of these, the February percentage is expressed as a deviation above the average of the post-war period prior to 1929, or, in other words, the table shows the height of crisis unemployment above the normal post-war level. "Other manufacturing," which has absolutely the highest percentage of unemployment, has also the greatest excess over the normal level. At the other extreme stand "food, drink, and tobacco" and printing. This is not surprising, for it is consistent with experience of previous depressions in many countries. It is interesting to notice, however, that even during the crisis, unemployment in printing remained for a long

time below the average, or normal, level for "food, drink, and tobacco." The high figures reached in "wood, furniture, etc." and building are also what we might expect from past experience and theory. Nor is it surprising to find that mining and engineering, although suffering a degree of unemployment comparable with the other two industries, have not experienced so considerable an

TABLE IV

UNEMPLOYMENT IN THE CRISIS OF 1929–31

INDUSTRIAL GROUP	PERCENTAGE OF UNEMPLOYED										
	1929				1930				1931		
	Feb.	May	Aug.	Nov.	Feb.	May	Aug.	Nov.	Feb.	Deviation above Normal	Deviation — Standard Deviation
1. Wood, furniture, etc.	6.5	13.6	14.2	15.5	20.6	25.2	21.3	29.4	31.1	25.2	6.8
2. Engineering, metals, etc	11.2	9.4	13.2	15.4	16.7	20.5	21.9	25.2	27.7	18.2	4.1
3. Food, drink, and tobacco	5.4	11.4	11.6	12.8	9.3	14.2	15.4	16.8	17.4	6.6	2.1
4. Clothing, hats, boots, etc	9.8	10.2	12.8	10.0	12.5	16.7	21.0	22.5	25.9	20.3	6.5
5. Books, printing, etc	2.6	3.2	3.4	3.3	3.8	6.8	8.4	10.1	12.6	10.5	15.0
6. Other manufacturing	13.8	17.9	20.7	22.1	25.5	31.0	32.8	38.7	42.3	29.9	7.0
7. Building	10.6	8.8	11.9	14.3	17.5	23.3	25.7	27.9	30.4	24.6	9.1
8. Mining	13.2	12.0	11.3	8.6	8.7	12.2	20.8	28.8	32.4	21.5	4.8
9. Other land transport	7.6	8.4	9.3	9.0	9.9	14.6	16.7	18.5	21.9	11.0	6.5

increase above the post-war normal level. Indeed, in this latter regard, they are comparable with the clothing trades.

It is clear, however, that in estimating the magnitude of the disturbances caused by the crisis in different industries, some consideration should be given to their normal instability. Where violent fluctuations occur even in fairly prosperous years, a high figure for unemployment during a general depression is not as significant as it would be in an industry that normally enjoys considerable stability. The last column of Table IV throws some light upon this aspect of the question. This shows the deviation

of unemployment in February, 1931, above the normal level, expressed in terms of the standard deviation. Thus, although printing had the lowest actual percentage of unemployment, this represented a greater disturbance, as compared with the variations of the previous few years, than the higher percentages in other industries. Building and "wood, furniture, etc." are still outstanding, while other manufacturing, already so unstable an industry, has undergone a considerable abnormal disturbance. It is interesting to note that, measured in this way, the disturbance in "food, drink, and tobacco" is almost insignificant, while the disturbance in clothing appears to be actually greater than in mining and engineering. Of course, such a statistical ratio is but an imperfect measure of the abnormality of the present situation in different industries; yet it does assist us to a better understanding than would a mere comparison of the actual percentages of unemployed.

The high level of unemployment in 1931 is the natural accompaniment of so great a decline in overseas income and in home investment, and of such confusion in the public finances as Australia has experienced. In its incidence on different industries, the increase of unemployment presents little of novelty; and we may expect that it will decline in the course of time, when general economic conditions improve throughout the world. But there is no reason to expect that the normal level of unemployment will fall to pre-war dimensions until those causes have been removed which were operative even before the crisis of 1929–31. Prominent among these, we have suggested, is the great instability, even in good years, of Australian manufacturing industries.

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EARLY INDUSTRIAL PREFERRED STOCKS IN THE UNITED STATES

PREFERRED stock was first used in this country in 1836 by railroad and canal companies. In its earliest form it was like common stock except for the dividend preference, and, in most cases, it was automatically converted to common stock after a short period. This temporary character disappeared about 1850, and during the third quarter of the nineteenth century preferred stock developed into a distinct type with many special rights and privileges. It was mainly adopted at this time for purposes of railroad financing.[1] There were, however, a few industrial preferred stocks of more than local interest. It was in this field that preferred stock later received its most widespread use and some problems of the later stocks were foreshadowed in these earliest issues. Through brief histories of a number of industrial companies this article attempts to show the kind of company which issued preferred stocks, their nature, and the conditions under which they were used.

THE NEW ENGLAND WORSTED COMPANY

The New England Worsted Company, which had begun its operations at Lowell, moved in 1837 to Framingham, Massachusetts.[2] There it had purchased the property of the Saxon Company which was engaged in the manufacture of woolen goods. By 1845 the company had three mills; it had 417 workers, about one-half of whom were women; the capital employed in the business was $400,000; its annual product was valued at approximately $400,000. The chief articles manufactured at that time were worsted yarn not made into cloth (valued at $175,000) and woolen

[1] For the early history of preferred stock in this country see my articles in the *American Economic Review*, March, 1929, and March, 1931.

[2] J. H. Temple, *History of Framingham, Massachusetts* (Framingham?, 1887), p. 358; D. H. Hurd, *History of Middlesex County, Massachusetts* (Philadelphia, 1890), III, 646.

blankets (valued at $120,000).[3] It is highly doubtful whether at that time any company in this country which produced such articles as those manufactured by the New England Worsted Company could have been very successful, as England had a virtual monopoly of the production of worsted products until the Civil War.[4]

The dividends paid on New England Worsted stock from July, 1843, through January, 1851, indicate, however, some degree of prosperity for the undertaking. Though dividends were passed four times during this period, the company managed to pay something on its stock in each of these nine years.[5] During the years 1845–51, inclusive, shares of the par value of $100 sold in the Boston market for as much as $103 per share and as low as $50.[6] In 1851 the price range was from $86 to $71.

In July, 1851, the New England Worsted Company failed to pay a dividend.[7] The *United States Economist* a year later wrote of this company that it had "sustained a loss on its last year's business of $219,000, owing entirely to the depreciation of their surplus stock—a plain case of over-production. The company have under consideration the manufacture of Tapestry and Brussels Carpeting, and propose to create 5,500 new shares, at $50 per share, reducing the par of the old to the same price, and the new Stock to be a preferred one at 8 per cent. per annum."[8]

This readjustment of the financial structure of the corporation must have taken place about the close of the year 1852. The ledger of Michael H. Simpson—the prime mover in the company—shows that in December of that year he subscribed for 1,140 of these preferred shares. An examination of this record leads to the conjecture that most of the shares taken by Simpson were to liquidate notes held by him against the company.[9] Legislative

[3] W. Barry, *History of Framingham, Massachusetts* (Boston, 1847), pp. 149, 150.

[4] M. Keir, *Manufacturing Industries in America* (New York, 1920), pp. 194, 195.

[5] J. G. Martin, *Twenty-one Years in the Boston Stock Market* (Boston, 1856), pp. 44, 45.

[6] *Ibid.*, p. 43. [7] *Ibid.*, p. 45.

[8] *United States Economist*, July 17, 1852, p. 386.

[9] The Roxbury Carpet Company of Saxonville, Massachusetts, has very kindly supplied the information on Simpson's ledger. Martin, *op. cit.*, p. 49, states that this preferred stock was issued in 1852.

authority was not procured for this stock issue until March, 1853.[10] Preferred dividends of 4 per cent each were paid in July, 1853, and January and July, 1854; on the same dates the common stockholders received 3, 3, and 2 per cent, respectively.[11] Thereafter no dividends were paid on either the common or the preferred shares. In October, 1857, two houses which were commission merchants for the company failed.[12] As a result, the mills were forced to shut down. Efforts were made to arrange for the continuance of the business,[13] but they could not have been successful as the property was sold in 1858 and subsequently operated as the Saxonville Mills.[14] This latter concern was absorbed by the Roxbury Carpet Company, which operates today.

THE AUGUSTA WATER POWER COMPANY

In 1852 the Augusta Water Power Company, which had a dam across the Kennebec River at Augusta, Maine, owned and operated six sawmills and supplied water power to two other concerns.[15] While the early history of this enterprise had been marred by a series of reverses, it looked at this time as if the corporation might survive. The stock of the company was selling on the Boston Stock Exchange at prices ranging from $6.00 to $7.00 per share, and in 1853 it reached $7.25.[16]

A new disaster occurred in September, 1853. A fire destroyed the company's sawmills and machine shops, and the flour mill which it had been supplying with water. This misfortune was almost overwhelming, but the stockholders immediately decided to rebuild. A large amount of money was needed. Legislative authority was secured either to issue new stock or to assess the

[10] *Massachusetts Laws*, 1853, chap. 76.

[11] Martin, *op. cit.*, pp. 45, 49.

[12] *Boston Herald*, October 2, 1857, pp. 2, 4, and October 3, 1857, p. 4; *De Bow's Review*, July, 1858, p. 113.

[13] *Boston Herald*, October 7, 1857, p. 4.

[14] Temple, *op. cit.*, p. 358; Hurd, *op. cit.*, III, 646.

[15] The Augusta Water Power Company succeeded the Kennebec Locks and Canals Company under *Maine Laws*, 1847, chap. 79. Much information on these companies may be found in James W. North, *The History of Augusta* (Augusta, 1870), pp. 651–56.

[16] Martin, *op. cit.*, p. 66.

old.[17] In October, 1853, an assessment was ordered by the stockholders, but in the following January they rescinded the order and decided to raise money by a preferred stock issue. It should be noted that the legislative act permitting the use of stock did not specifically authorize the issue of preferred stock. Nevertheless, most of the necessary capital was procured in that way. By 1855 the mills had been rebuilt, though in order to complete them the general manager had used some of his own money, for which the company was indebted to him.

Had the corporation been able to resume its operations upon the completion of the mills, it probably could have paid its debts and prospered. But its dam was partially destroyed just as the mills were being finished. At that time the company could not raise money. Consequently, the cotton mill, which had been supplied with water by the power company, undertook the repair of the dam. The cost of this work was $20,000. That sum was eventually raised by the water power company through the sale of mortgage bonds, and the claim of the cotton mill was satisfied. The enterprise could not obtain enough money, however, to pay its manager the sum which he had advanced to complete the mills. The manager sued, got a judgment, had it enforced, and came into possession of the property subject to the mortgage of $20,000. The Augusta Water Power Company, divested of its assets, held its last meeting in 1859 to cancel some unissued bonds. Annual meetings were called for the next five years; no one attended, so the corporation ceased to exist.

THE NEW JERSEY ZINC COMPANY

The New Jersey Exploring and Mining Company was authorized in 1852 to change its name to the New Jersey Zinc Company.[18] While the earlier concern had been organized to work the zinc mines at Franklin, New Jersey, and to manufacture "the zinc of commerce and zinc ware etc.," the successor company was very much interested in the production of zinc paint.[19] The

[17] *Private and Special Laws of Maine*, extra session, 1853, chap. 188.

[18] *New Jersey Laws*, 1852, chap. ix.

[19] *Hunt's Merchants Magazine*, XXVIII, 315–25; also *A Record of Accomplishment, 1848–1923; A Short History of the New Jersey Zinc Company* (private printing, New York: New Jersey Zinc Company, 1924).

French discovery of a paint which could be made from zinc led the heads of this enterprise to experiment with the production of this new commodity and to develop a relatively cheap manufacturing process. Consequently, they set up a paint factory at Newark, New Jersey, in 1852. This was a new venture in America and proved profitable. During ten months of 1852 their paint sales exceeded $185,000. The production of dry white oxide of zinc for 1852 was a little less than two and one-half million pounds, and for 1853 was more than four million pounds.[20]

The occasion for the issue of preferred stock which in 1855 the New Jersey legislature allowed this company to make[21] is probably to be found in the fact that the production process employed in 1852 was a few years later replaced by "an entirely new process much more economical and yielding a better and more uniform product."[22] In all probability such a change in production technique required money, and this was raised by the issue of preferred stock. The New Jersey law mentioned above authorized the issue of an 8 per cent stock which should participate equally with the common after the latter had received 8 per cent. Another section of the same act had the then unusual provision that the holders of the common stock be offered the new shares in proportion to their holdings; the preferred which the old stockholders did not take up could then be sold as the directors determined.

In December, 1857, the company had outstanding 12,611 shares of preferred stock and 33,389 shares of common; these stocks were carried in the company's balance sheet at $157,637.50 and $1,042,362.50, respectively.[23] Some dividends at least were paid on the preferred stock. The *Mining and Statistic Magazine* stated in its January, 1858, issue that "the New Jersey Zinc Company has declared a dividend of 4 per cent. on the preferred stock of that Company, payable 4th inst."[24] Also in the issue of the same journal for the following June attention was called to a

[20] *Hunt's Merchants Magazine*, XXX, 645.

[21] *New Jersey Laws*, 1855, chap. ccviii.

[22] *A Record of Accomplishment, 1848–1923, etc., op. cit.*

[23] *Mining and Statistic Magazine*, January, 1858, pp. 64, 65.

[24] *Ibid.*

preferred dividend of 4 per cent payable by this company on July 5, 1858.[25]

The company obtained a new charter in 1880 and changed its name to the New Jersey Zinc and Iron Company.[26] In 1897 this concern consolidated with others, and reverted to the old name, the New Jersey Zinc Company,[27] under which title it continues to operate today.

THE CUMBERLAND COAL AND IRON COMPANY

The Cumberland Coal and Iron Company was organized under the laws of Maryland in May, 1851, as a consolidation of six mining companies.[28] The list of directors for the year 1852 indicates that New York interests controlled and guided the corporation.

The enterprise was launched upon too large a scale and with a too enthusiastic estimate of the immediate demand for coal.[29] The company started with costly machinery which was out of all proportion to its actual production. It maintained a very expensive organization in New York. The promoters had counted on cheap transportation of the coal to the market. This did not materialize, as the construction of the new Chesapeake and Ohio Canal proved faulty, and the Baltimore and Ohio Railroad not only charged higher rates than had been expected but also compelled an advance of $150,000 to enable the purchase of coal cars. Finally, the corporation had relied upon the immediate use of its coal by the railroads and this did not begin in volume until 1857.

Operating under these adverse conditions and under the necessity of continuing its construction expenses, the undertaking was almost destroyed by the panic of 1857.[30] The company's condition was made worse by questionable actions on the part of its

[25] *Ibid.*, June, 1858, p. 477.

[26] *A Record of Accomplishment, 1848–1923, etc., op. cit.*

[27] *Ibid.*, and the *Commercial and Financial Chronicle*, February 27, 1897, p. 424.

[28] *Report of the President and Board of Directors of the Cumberland Coal and Iron Company to the Stockholders*, July 21, 1852.

[29] *Circular of the Committee of Shareholders Appointed at a Meeting Held on the 15th of April, 1858, to the Stockholders of the Cumberland Coal and Iron Company* (New York, 1858). Much material for the sketch of this company was procured from this document.

[30] *Ibid.*, and also *De Bow's Review*, December, 1857, p. 654.

officials who seem to have sold to one of their number the company's best coal lands.[31]

A stockholders' meeting, held in April, 1858, formulated a plan to re-establish the corporation. The business had earned annually in the three years ending May, 1857, about 2 per cent net on its capital stock of $5,000,000. These earnings had been applied to reducing the debt and to new construction. As the general market for coal was rapidly expanding, it was felt that the future of the corporation would be assured if it should cut its overhead, sell its own coal, pay off its floating debt which was $153,000 in excess of the current assets, and raise some additional working capital.

There were two methods of raising new money open to the company under an act passed in March, 1858, by the Maryland legislature[32]—an issue of bonds and an issue of preferred stock. The shareholders at their April, 1858, meeting decided against the use of bonds, because they could be sold only at a large discount and the interest charges would have to be met. The stockholders present at the meeting unanimously indorsed the following plan:

1. Every shareholder could convert his common stock into preferred by paying $5.00 per share before a certain date (probably June 30, 1858).

2. The preferred stockholder should be entitled to receive dividends to the extent of 6 per cent on the par value of this stock, which was $100, whenever any distribution should be made of the surplus profits, in priority to any shares which should not have been converted. Furthermore, the legislative act authorizing this preferred stock provided that it should participate equally with the common after both classes had received 6 per cent.

Of course, if every old share had been converted into preferred, the new stock would have been only common with another name. The stockholders' committee report which explained the plan pointed out that complete conversion might result, and that in

[31] J. W. Thomas and Judge T. J. C. Williams, *History of Allegany County, Maryland* (Cumberland?, Md., 1923), I, 240.

[32] *Maryland Laws*, 1858, chap. 252.

this event everyone would benefit because money would have been "raised without any of those sacrifices which have been the fashionable road to ruin for so many corporate enterprises." If the stockholders who converted their common did not control the corporation the preference could not have been very valuable, because the cumulative feature seems to have been lacking. How much of the common was exchanged cannot be stated.

In 1870 the Consolidation Coal Company acquired some of the property of the Cumberland Coal and Iron Company in return for stock in the former enterprise. At the same time the Cumberland Coal reduced its stock.[33] In this action the preferred shares must have disappeared, though exactly how seems unascertainable.[34]

THE MARIPOSA GOLD MINING COMPANY AND THE MARIPOSA LAND AND MINING CORPORATION

The Mariposa Gold Mining Company was organized on June 25, 1863, under the laws of New York.[35] The entire capital stock —$10,000,000—was given to John C. Frémont and his associates in return for an option to purchase seven-eighths of the Mariposa Estate in California. This property contained gold mines which were then yielding $100,000 per month. Two bond issues floated shortly after organization—the first amounting to $1,500,000 and the second to $2,000,000—failed to produce sufficient gold dollars to enable the company to acquire a title to the property and to pay the claims against the estate which were continually appearing.

Under an arrangement with the owner, the Mariposa Company worked the mines—but not successfully. By 1865 the corporation was operating at a $20,000 monthly loss. Again efforts were made

[33] *Maryland Laws*, 1870, chap. 198.

[34] *Commercial and Financial Chronicle*, May 7, 1870, p. 589.

[35] Much information on the Mariposa Estate and the Mariposa Gold Mining Company was obtained from *The Mariposa Estate, Its Past, Present, and Future* (New York, 1868). A little material can be found in each of the following: *The Mariposas Estate* (London, 1861); F. Tuthill, *The History of California* (San Francisco, 1866), pp. 349–51; B. Mitchell, *Frederick Law Olmsted* (Baltimore, 1924), pp. 65, 66; T. F. Cronise, *The Natural Wealth of California* (San Francisco, 1868), pp. 274, 275, 577, 578.

to raise sufficient money to acquire the title, to pay the claims against the estate, and to improve the property. The New York legislature on April 29, 1865, granted the corporation authority to issue preferred stock.[36] Upon the vote of stockholders holding two-thirds of the stock, the by-laws of the corporation were amended so that stockholders who so desired might convert their common stock into preferred by the payment of $5.00 per share. About ninety thousand shares were exchanged, yielding approximately $450,000. While the consent for the preferred stock issue was being secured and the stock converted, the interest on the bonds and claims—due in gold—had been mounting so rapidly that when the money in currency was actually received it was just sufficient to pay the accumulated interest and the arrears of taxes on the estate.

In 1866 Mariposa preferred stock appeared in the reports of the New York stock market published in the *Commercial and Financial Chronicle*. Throughout 1867 this preferred stock was not only regularly quoted but each week it appeared in the *Chronicle* as one of the seventeen stocks used to show the trend of the market.[37] During most of these two years the mines were being operated by the chief creditor of the company for the satisfaction of his claims.

All mining operations had to be stopped in December, 1867, when an important river dam was destroyed. To provide the money to rebuild the dam and to enable the Mariposa Gold Mining Company to acquire the title to the property, application was made by the corporation in January, 1868, to the New York legislature for authority to issue a first preferred stock. Either the bondholders or the legislature defeated this move, and the company was faced with the possibility of losing all opportunity to obtain the estate.

In 1868 the bondholders devised a plan to acquire the property for the company. Title to the estate was to be vested in trustees both for the benefit of the bondholders and preferred stockholders, who would convert their bonds and preferred stock into trust certificates which would yield 10 per cent cumulative divi-

[36] *New York Laws*, 1865, chap. 608.

[37] For example see issue of July 27, 1867, p. 109.

dends, and for the benefit of the remaining preferred stockholders who were to participate in any dividends the trustees might be able to pay up to an 8 per cent non-cumulative dividend. Any further profits were to be applied to retiring the trust certificates. When all of these had been redeemed the property was to be conveyed to the Mariposa Company. The bondholders and preferred stockholders who exchanged their securities for trust certificates were, of course, to pay assessments. The money thus raised, it was thought, would be adequate to buy the property and to supply ample working capital. The plan was put into operation, and title was transferred by the owner to the trustees subject to a purchase money lien. The Mariposa Company operated the mines as agent for the trustees.

It should be noted that, under the bondholders' plan, if the dividends on the trust certificates were unpaid for two years, then the trust's interest in the estate was to be sold at auction to the highest bidder. The proceeds of the sale were to be used, first, to pay the expenses, second, to pay any balance due on the purchase money, third, to redeem the certificates with accrued dividends, fourth, to pay 50 per cent of the par value of the preferred stock of the Mariposa Company exclusive of dividend arrears. Finally, any surplus was to be divided pro rata among the holders of Mariposa common and preferred stocks, irrespective of the 50 per cent previously paid on the preferred. The Mariposa preferred stock was thus preferred as to assets. At that time this was an unusual privilege for preferred stock.

Once again the plan for raising the required funds seems to have been inadequate and another method was tried. A New York law passed May 8, 1869,[38] authorized the company to issue first preferred stock. These shares could be marketed only upon the consent of the holders of two-thirds of the existing preferred stock and the same proportion of the outstanding common. No new mortgage or preferred stock with an equal or prior claim to earnings could thereafter be created without the consent of the holders of at least 95 per cent of the new shares. Most of the new issue was to be used to acquire or take up the Mariposa trust

[38] *New York Laws*, 1869, chap. 712.

certificates issued in 1868; the balance was to be exchanged for existing preferred stock upon the payment of an amount equal to 30 per cent of the par of the new stock. In June, 1869, Mariposa first preferred appeared in the stock quotation list of the *Commercial and Financial Chronicle*.[39]

The final episode in the life of the Mariposa Gold Mining Company was the organization of a successor corporation. An advertisement which appeared in the *Commercial and Financial Chronicle* of September 9, 1871,[40] stated that, because a panic in Mariposa stocks had caused the failure of the trust plan, a new company was being organized—The Mariposa Land and Mining Corporation—for the purpose of acquiring and operating the Mariposa Estate. The old trust certificates, plus cash, were exchangeable for preferred stock in the new company; while the old preferred stocks and the old common, plus cash in each case, were exchangeable for the common of the new organization. The new preferred shares were, like the old trust certificates, to be retired when possible.

The references to the new company in the *Commercial and Financial Chronicle* for the years 1872–87, inclusive, show much litigation, suggest fraudulent manipulations, and indicate little actual mining. In 1887 the *Chronicle* reported the sale of the Mariposa Estate for $300,000.[41]

THE QUICKSILVER MINING COMPANY

The preferred stock of the Quicksilver Mining Company of New York came into existence in 1870.[42] At that time the corporation was unable to pay the interest on its mortgage debt of $1,500,000. Under a by-law which was adopted at its annual meeting in 1870, the holders of 42,913 shares surrendered their stock and by paying $5.00 on each share received in return the same number of shares of preferred stock. The holders of these

[39] *Commercial and Financial Chronicle*, June 12, 1869, p. 752.

[40] *Ibid.*, September 9, 1871, p. 324.

[41] *Ibid.*, June 4, 1887, p. 713.

[42] *Ibid.*, June 2, 1877, pp. 507, 508; also *Hunt's Merchants Magazine*, May 1870, p. 379. For acts of incorporation see *Pennsylvania Laws*, 1859, chap. 301, and *New York Laws*, 1866, chap. 470.

shares were entitled to a preferred dividend of 7 per cent and to an equal participation with the holders of the common stock in any surplus earnings. The company in this way received $214,565 and in return agreed to pay over $300,000 annually in preferred dividends.

By 1874 the company showed substantial progress. The president in his report to the stockholders in February of that year stated that the first mortgage indebtedness of $500,000 in gold, due June 1, 1873, had been paid at maturity.[43] After paying this first mortgage debt and providing for interest which fell due on January 1, 1874, the treasurer reported that the business had no floating debt and had on hand quicksilver and ore worth $320,000. The prosperous state of the company led to the calling of a special meeting in November, 1874, to consider the proposition that the common stockholders be allowed to convert their stock into preferred upon the payment per share of $5.00 with interest from February 24, 1870, the date on which the original conversion had been authorized. George L. Kent, a holder of both classes of stock, objected and served a temporary injunction to restrain the meeting from passing a resolution authorizing the conversion.[44]

The contest between Kent and the company was carried through the courts and in 1879 was settled by the New York Court of Appeals which decided in favor of Kent.[45] In the course of this legal action it was brought out that the company did not have the right to create this preferred stock. There was no general act or particular provision of the charter which would have given the company the power to classify its shares after organization. The court refused to say whether the company might have created two classes of stock before beginning its operations. The illegally created preferred stock having been issued, however, and having been traded in freely for some time without any objections from the common stockholders, the court held that the rights of the

[43] *Commercial and Financial Chronicle*, March 7, 1874, p. 247.

[44] *Ibid.*, December 5, 1874, p. 584.

[45] *Kent* v. *Quicksilver Mining Co.*, 78 N.Y. 159. Also *Commercial and Financial Chronicle:* February 6, 1875, p. 141; October 13, 1877, p. 358; and October 20, 1877, p. 369.

preferred stockholders could not be destroyed either by the proposed conversion or by cancellation of the stock.

During the years 1875 and 1876 the company prospered and retired in each year $300,000 of second mortgage bonds.[46] This reduction of debt aroused the preferred stockholders and produced another interesting legal battle concerning the rights of preferred stock. In the course of this contest a New York court said:

> It was the duty of the directors to pay all debts, funded and otherwise, existing at the formation of the preferred stock. . . . . The preferred stockholders have no right to prevent the payment of the company's debts, nor to exact a settlement based upon the claim that such payment of debts was made out of their moneys. When the affairs of the company would judiciously permit a dividend, then the first 7 per cent must go to the preferred stockholders. Until such a dividend can be declared the preferred stock had no right to a yearly settlement excluding the debts, or to a settlement on the basis that one should have been declared every year.[47]

Partly for the purpose of stopping this and similar legal disputes, the directors declared the first dividend on the preferred stock.[48] On August 4, 1881, 9¼ per cent was declared on the preferred and 2¼ per cent on the common. In 1885, with the prospect of prosperity in the near future, there was a movement to retire the preferred stock by a bond issue of one-half of the size of the outstanding preferred. This project was, however, abandoned.[49]

The full preferred dividend was paid in only one year, 1881; after 1891, with the exception of small dividends between 1899 and 1903, no dividends were paid on the preferred shares.[50] In 1915 a reorganization was apparently attempted.[51] Finally, a receiver was appointed in November, 1917;[52] and in the following

[46] *Ibid.*, March 25, 1876, p. 303, and July 7, 1877, p. 15.

[47] *Ibid.*, July 31, 1880, p. 124.

[48] *Ibid.*, August 13, 1881, p. 178.

[49] *Ibid.*, November 14, 1885, p. 557, and *Investors' Supplement*, December, 1886, p. 102.

[50] For dividend record see: *Investors' Supplement*, November, 1891, pp. 148, 149; *Commercial and Financial Chronicle*, April 15, 1899, p. 724; Poor's *Manual of Industrials*, 1910 (New York, 1910); and Moody's *Analyses of Investments*, 1917 (New York, 1917).

[51] *Commercial and Financial Chronicle*, March 20, 1915, p. 985.

[52] *Ibid.*, November 24, 1917, p. 2099.

month the stocks of the company were stricken from the New York Stock Exchange List—"the prospect having been exhausted."[53]

Attention should be called to two other companies which issued preferred stock at an early date. Concerning these enterprises very little material can be found.[54]

THE WYANDOTTE AGRICULTURAL WORKS

The Wyandotte Agricultural Works was probably not a very important company in 1872 when it issued 10 per cent preferred stock to the amount of $36,000. As there was a legal contest over the rights of the preferred stockholders, this issue acquired more than local interest and is therefore included in this paper. According to the facts set forth in a decision of the Supreme Court of Michigan,[55] the preferred stock was issued when the company was in poor financial condition; profits were not earned after the new stock was sold, though two semiannual dividends were paid on these shares; and the corporation had ceased by 1875 to carry on the business for which it was created. The preferred stock was for one year after its issue convertible into common and, according to the court, probably was cumulative.

THE INTERNATIONAL OCEAN TELEGRAPH COMPANY

In 1873 the International Ocean Telegraph Company of New York owned cables extending from Lake City, Florida, to Havana, Cuba. It possessed exclusive grants from the United States and the Spanish governments to lay and operate cables between Cuba and the United States.[56] At that time its capital consisted of $850,000 in common stock and $650,000 in 15 per cent preferred stock. In 1871 and 1872 there had been a contest for its control—

[53] *Ibid.*, December 22, 1917, p. 2461.

[54] For another concern which issued preferred stock, the Reno Real Estate Company, the amount of information discovered is indeed small. Only some quotations on its second preferred stock for 1875 and 1876 have been found. See *Financial Review*, 1878 (New York, W. B. Dana & Co., Publishers, 1878), pp. 78, 79.

[55] *Lockhart* v. *Van Alstyne*, 31 Mich. 76.

[56] *Commercial and Financial Chronicle*, October 11, 1873, p. 492; also *U.S. Stat. L.*, 39th Cong., sess. 1, chap. 74.

English interests and the Western Union Telegraph Company having been the contestants. Through the purchase of preferred and common stocks, the Western Union had acquired a controlling interest.[57] The preferred stock of the International Ocean Telegraph Company was exchanged in 1876 for the common of the same corporation—one share of preferred for one share of common and a cash bonus of 25 per cent.[58]

CONCLUSIONS

This virtually exhausts the examples which I have been able to discover of prominent industrial preferred stocks issued prior to 1875.[59] It is clear therefore that before this time such stock was not widely used, but these examples afford instructive information concerning the development of preferred stock in the United States.

The industrial companies which were the pioneers of their field in using preferred stock were engaged in a variety of occupations: worsted manufacture; the supply of water power; zinc mining and paint production; coal, gold, and quicksilver mining; cable communication; and the production of agricultural implements. Early industrial preferred stock issues appear to be associated to some extent with what were at the time relatively new fields of development. The companies examined were, however, for the most part earnest and serious undertakings.[60] That the projects were not entirely unsound is evidenced by the fact that many of these concerns existed for some time and by the fact that a few of them—though reorganized or absorbed by other companies—

[57] *Commercial and Financial Chronicle*, February 15, 1873, p. 220.

[58] *Ibid.*, July 22, 1876, p. 87, and also February 19, 1876, p. 175.

[59] A study of state laws enacted prior to the introduction of general acts with sections permitting the use of preferred stock would undoubtedly bring to light legislative authorizations of small industrial preferred stock issues such as that of the Sagamore Company of Portsmouth, New Hampshire. For a few references to this company and its preferred stock issue see: *United States Economist*, November 20, 1852, p. 79; *New Hampshire Laws*, 1846, chap. 439 and 1850, chap. 1058; and the *Portsmouth Directory*, 1850–51, p. 187.

[60] For an example of an unimportant preferred stock in a wildcat venture see an advertisement in the *Commercial and Financial Chronicle* of September 2, 1876, p. 225.

continue to operate today. The corporations which used preferred stock not only were engaged in a variety of occupations but were created by a number of states and operated in many sections of this country.

All the available evidence indicates that these companies, with probably one exception, issued preferred stock only when they were in financial straits. The New Jersey Zinc Company alone seems to have been prosperous. This company had substantial earnings just prior to the preferred stock issue; it paid the preferred dividends just after the creation of the new stock; and at its issue, the preferred stock must have had value because the law authorizing its use contained the then unusual provision that the old shareholders should have a priority in subscribing for the new shares. The other industrial companies, in contrast, were involved in financial difficulties when they used preferred stock. The extreme in this respect was found in three mining corporations, each of which gave a substantial dividend preference in return for an almost worthless share of common stock and five dollars. Such an extravagant inducement to take preferred stock had never been used before. Because of such terms of sale, the questionable financial status of the early industrial corporations when they issued preferred stock was not adequately indicated in the preferred dividend rates—they varied from 6 to 15 per cent, with 8 per cent as the most usual rate.

When these industrial preferred stocks were created, attention was concentrated on making the new stock attractive, and sometimes this resulted in the complete disregard of the interests of the old shareholders. The Quicksilver Mining Company is a good illustration. In that case a dividend preference with an unusually liberal participation privilege was given in return for the payment of a small sum of money. The original stockholders of this company, soon after the new shares were issued, regretted their lack of foresight and their failure to attach to the preferred stock some provisions which would have protected them. While the experience of this company perhaps represents the extreme, the issues of the other corporations indicate similar deference to the preferred stockholders and scant attention to the interests of the

owners of the common shares. In several cases the preferred stock was made participating, so that its holder would be as well off as the common stockholder if the enterprise should be successful. One stock was made preferred as to assets—a very unusual feature. Another stock had a veto power over the issue of senior securities. The 15 per cent preferred dividend of one stock would appear to have effectively shut off the common stockholder from the profits. It might seem that the redeemable feature of one of the stocks was inserted to protect the common stockholder, but this was undoubtedly not the case. It was purely an inducement to those who might be interested in exchanging the trust certificates of a bankrupt company for preferred stock in its successor. There were two issues, however, in which the common stockholders' protection was considered: in one, the stock was convertible into common during only the first year after its creation; in the other, the preferred was definitely made non-cumulative.

An examination of these company histories leads to the general conclusion that the issue of preferred stock was extremely helpful to these corporations. At least four companies were able to survive severe crises in their affairs because of the use of this type of stock; another company raised money to effect improvements in its production methods. As the financial journals of this period contained many references to these companies and their preferred stock issues, the experiences of these corporations must have had far-reaching effects. Some of the problems involved in the use of preferred stock were made familiar to the public. But there was a more important result. It must have become clear that preferred stock could be used under certain conditions with substantial success in many branches of industry.

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THE FONDACO DEI TEDESCHI: THE MEDIUM OF VENETIAN-GERMAN TRADE

AMONG the cities of Western Europe which survived the disorders of the Germanic invasions none was more favored by fate than Venice. The barbarian scourge which repeatedly brought the sword and torch to the Continental cities never molested Venice. On the contrary, the invasions increased the population on the islands and transformed the seasonal camp of fisher folk into permanent settlements.

The lagoons, of course, offered scanty means for a livelihood. Fishing and the production of salt were the only occupations open to the islanders, and they soon made the most of these. The pursuit of these occupations also brought them into contact with the cities on the Continent. Salt is a universal need, and the Venetian fishermen early visited the cities of the Po Valley to exchange salt and fish for the articles which they needed, especially foodstuffs.[1]

In addition to her protected island position, Venice was favored by her intimate relations with Byzantium. This contact put her in touch with the much-coveted Levantine goods. To assure markets on the Continent for these goods Venice made treaties with the rulers of Upper Italy. In 715 she made such a treaty with Liutprand, king of the Lombards. After the conquest of the Lombards by the Franks, Charlemagne renewed this treaty, and these arrangements provided the basis for trade relations between Venice and the Empire for centuries. By these treaties Venice was given the liberty to trade in the cities of the Empire, subject only to the regular authorized tolls.[2]

[1] Horatio F. Brown, *Venice, an Historical Sketch of the Republic* (London, 1893), p. 14; Ludo Moritz Hartmann, *Zur Wirtschaftsgeschichte Italiens im frühen Mittelalter* (Gotha, 1904), p. 78.

[2] Brown, *op. cit.*, pp. 49 ff.; Heinrich Kretschmayr, *Geschichte von Venedig* (Gotha, 1905), I, 170 ff.; William Heyd, *Histoire du commerce du Levant au Moyen-Âge* (Leipzig, 1885), I, 111 ff.; Adolf Schaube, *Handelsgeschichte der romanischen Voelker des Mittelmeergebiets bis zum Ende der Kreuzzuege* (Munich and Berlin, 1906), p. 4; Hartmann, *op. cit.*, pp. 74 ff. Charlemagne's treaty was made in 812 and was renewed in 840, 880, 883, 924, 967, 983, 1095, and 1177.

The emperors negotiated these treaties in the capacity of kings of Italy, and the trade relations between Venice and Germany are, therefore, not directly involved. While the evidence for such trade before the thirteenth century is scarce, it is sufficient to warrant the statement that the cities of German lands, especially the cities of the south, were in touch with Venice during the ninth, tenth, and eleventh centuries.[3] This commerce, if such we may call it, was probably carried on through the medium of the fairs of Ferrara, Pavia, and the Champagne region, where the Germans and Venetians met and exchanged wares. It is only as we come to the late twelfth century that it is possible to trace the organization of a direct trade between Venice and the German lands, and it is interesting to note that just this period marks the evolution of the Fondaco dei Tedeschi.

The word *fondaco* is derived from the Arabian word *fonduk*, which is etymologically related to the Greek πάνδοκος, an adjective meaning "all containing" or "all receiving." The Arabic *fonduk* includes the concepts "warehouse," "shop," and "inn." It was applied to the quarters occupied by western merchants in the seaport towns of the east.[4] The *fondaco* which the Venetians established for the German merchants in Venice was an imitation of these eastern establishments and bears more similarity to them than to the type of merchant quarters at Champagne fairs or the "Steelyard" of the Hansa in London. The former were owned and controlled by the cities in which they were situated while the latter were the property of the merchants who occupied them and were largely free from outside interference. A house of the second type would have been entirely incompatible with the monopolistic temper of the merchant oligarchy in control of the government of Venice.

It is impossible to fix the exact date at which German merchants began to occupy the *fondaco*. Tradition has it that the Senate arranged a building for the German merchants before

[3] For a summary of such evidence see J. Wesley Hoffmann, "The Commerce of the German Alpine Passes during the Early Middle Ages," *Journal of Political Economy*, XXXI (December, 1923), 832 ff.

[4] Heyd, *op. cit.*, II, 430, n. 7; H. Simonsfeld, *Der Fondaco dei Tedeschi in Venedig und die deutsch-venedianischen Handelsbeziehungen* (Stuttgart, 1887), II, 3.

1200, but the oldest source mentioned is for the year 1228. Fire several times destroyed the building wholly or in part, but German merchants occupied the buildings on the original site until Napoleon's seizure of the property in 1806. A fire during the winter of 1505 necessitated the construction of a new building, and when the Germans entered the new quarters it was not on the old restricted basis. The *fondaco* had become modern.[5] The time considered in this paper thus is bounded by 1228 and 1505.

In order to see the *fondaco* as it functioned in the fifteenth century let us accompany an imaginary merchant on a trip to Venice. Let us imagine that he comes from Nuremberg, which at that time occupied a foremost place in the German-Venetian relations. He may be thought of as one of the members of one of the merchant families, such as the Imhof or Tucher families, who are mentioned repeatedly in the records of the fifteenth century. We may imagine him to be one of two or three brothers in business with their father. The father has become too old to undertake the arduous journey to Italy, and the young man starts out for the first time with the company's surplus of wares, probably linen, for the Venetian market.[6]

A trip over the Alps in those days was a great undertaking, fraught with dangers from nature and from man and void of all the delight and thrill which charms the modern mountain-climber.[7] Had our merchant come from Basel or the lower Rhine, he might have chosen the Great St. Bernard or a Rhine pass, or even the recently improved St. Gotthard or Simplon Pass for his entry into Italy. Had he come from one of the eastern cities of the Germanic lands, he might have chosen one of the several routes through Kärnten. Coming from Nuremberg, he probably chooses the Brenner.

[5] Simonsfeld, *op. cit.*, pp. 5, 9, 11; William Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII (1874), 199, 219.

[6] Among the things commonly brought to Venice by the Germans were (1) metals: gold and silver (as coin and in the crude state), iron, copper, lead, tin; (2) furs and hides; (3) manufactured articles: leather articles, horn articles, woolen and linen cloth; (4) foods: grains, flour, nuts.

[7] E. Oehlmann, "Die Alpenpaesse im Mittelalter," *Jahrbuch fuer schweizerische Geschichte*, III, 174; see also Petrarch's letter on mountain-climbing in Robinson and Rolf, *Petrarch* (New York, 1898), pp. 307 ff.

Thus he starts from Nuremberg with a mule, perhaps two or three, laden with bales of linen cloth. Perhaps he is accompanied by other merchants or agents of other merchant houses. The little caravan moves on from town to town, through Augsburg, up the valley of the Lech and thence over to Mittenwald. Here the merchant encounters one of the discouraging features of medieval commerce. At Mittenwald he is obliged to hand over his goods to a group of local teamsters for further transportation. Thus he is obliged to desert his own pack animal and employ the services of others who demand high wages.[8] Other fees and tolls are collected at roadside castles, at the crossing of streams and mountain passes, and for would-be escorts in dangerous districts.[9] To these inconveniences of mountain travel are added the peril of poor roads along precipitous heights and the ever present danger from robbers. Perhaps the plundering of merchants is even being encouraged and authorized by the local lord, the king, or the emperor.[10]

If the merchant manages to get beyond the divide and over on the Italian side of the mountains with his wares he is confronted with new conditions which are hardly less uncertain than those left behind. He is on foreign soil which is hotly contested by rival cities whose struggles, though in themselves strange to him, must still be a matter of concern to him, since the fortunes of his business depend upon the success of one of the rivals. If he continues on the main road down the Etsch and Eisack Valley he has the advantage of taking his cargo down the latter stream by boat from Trent. However, if it happens that a state of war exists in and about Verona, he chooses to continue his journey by land.[11] Thus he goes over to the source of the Brenta River and follows this stream for some distance. In the vicinity of Feltra he crosses over into the valley of the Piava. Thence he

[8] Simonsfeld, *op. cit.*, p. 94.

[9] For a discussion of medieval toll systems see Hoffmann, *op. cit.*, pp. 827 ff.

[10] Such, for instance, was the case under Sigismund, the Hungarian king, who after becoming emperor in 1410 tried to prevent his German subjects from going to Venice (Simonsfeld, *op. cit.*, p. 49).

[11] Such was the situation during the conflict between Venice and the Carrara family in the early years of the fifteenth century (Brown, *op. cit.*, pp. 246 f.).

follows the road through Treviso and arrives on the shore of the lagoons. His journey has been long and dangerous, and he has been on the way for several weeks. A fast messenger might make the trip in fourteen days, but the merchant with his heavy load and the inevitable delays at toll stations and on account of inclement weather could certainly not expect to arrive in less than a month after his departure.

As our merchant prepares to cross the lagoons, he comes under the protection, but also the strict supervision, of the Venetian government. The first servant of the *fondaco* whom he encounters is the *barcharuolo*.[12] This boatman is under strict orders to bring the merchant and his wares, not to such a place as he may choose for his abode, but to the *fondaco* and nowhere else. As the gondola glides along the Grand Canal and under the Rialto bridge the *barcharuolo* points out a compact group of two-story buildings surrounded by a wall. This is the *fondaco*.[13] A landing is made, and at once a number of truckmen and carriers known as *partadori*[14] unload the merchant's wares and without consulting him carry them off to a storeroom in the *fondaco*. The merchant himself is escorted or directed into the office of the *visdomini*.[15] Here he has to make a sworn statement of all the goods and money which he has brought. The clerks of the office make an itemized list of the goods and money, which then furnish a basis for the import toll.

After the record has been made, the merchant presents himself

[12] Simonsfeld, *op. cit.*, p. 19; Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 200.

[13] The second floor afforded sleeping-rooms for the merchants. Besides being stored in storerooms, goods were stored in the aisles and in the open court. Merchants sometimes complained that they were unable to see across the court because of the heaps of bales and boxes (Simonsfeld, *op. cit.*, p. 9).

[14] Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 211; Simonsfeld, *op. cit.*, p. 19.

[15] There were, as a rule, three *visdomini*. They were appointed annually. They had supreme control over everyone and everything in the *fondaco*. They were responsible to the *consoli de mercanti*. The office was much desired and was open to the *nobili* only (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 209 f.; Simonsfeld, *op. cit.*, p. 18).

to the *fonticarius*, or manager.[16] With him he deposits his arms and from him receives the key and assignment to a room. Since our merchant comes from Nuremberg, he probably occupies a room permanently reserved for merchants of that city. Merchants of smaller towns often find it impossible to get a room and are forced to sleep on the bales in the storerooms and hallways.[17]

On looking about his quarters and thinking over his experiences the young merchant probably feels much as does the modern farmer who has come to the "big city" for the first time. The merchant's position is perhaps more dependent still in that even now he is separated from his goods.

When it comes to mealtime the merchant finds his way to the general dining-room for all German merchants. He finds the merchants seated at two long tables, at one of which he takes his place. He finds further that at his table are seated, in addition to Nurembergers, merchants from the lower Rhine and North Germany generally, while at the other table are seated those from Regensburg and other south and southeast German towns. What little administration is left to the merchants is attended to through the joint action of these two groups, such matters as the selection of a cook, of errand boys, messengers, and the like. Each table votes separately, and a majority of each is required for a decision. In case the two tables oppose each other on a question, a majority vote of the group as a whole decides the tie.[18]

[16] This officer was manager of that part of the *fondaco* which we would call the hotel. All matters which had to do with the Germans as guests came under his supervision. It was he who locked the *fondaco* at night (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 211; Simonsfeld, *op. cit.*, p. 21).

[17] The Venetian government claimed that the shortage of rooms was due to the fact that the merchants on leaving the *fondaco* failed to surrender the keys and thus only eighteen to twenty of the fifty-six rooms were available for newcomers (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 201; Simonsfeld, *op. cit.*, p. 10).

[18] Nuremberg and Regensburg, the leaders of the respective tables, were rivals for the leadership of the whole group. During the fifteenth century disputes arose. Even appeals to the Venetian government resulted. On the whole Regensburg retained the leadership among the cities (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 203 f.; Simonsfeld, *op. cit.*, pp. 46 ff., 85 ff.).

After the meal, if not before, our merchant finds a group of his countrymen assembled in the barroom, especially arranged for them. Here since he is alone with those of his own kind, perhaps also under the stimulus of the much-coveted Italian wines, the merchant begins to forget the restraints upon him. Here he learns from others who have come before him how to proceed in the transaction of his business. Here he hears the talk of the market, the prices buyers are paying, at what shops he can buy to the best advantage, and what percentage the Venetian government is demanding as toll. Here under the impetus of current gossip and of the wild tales of pilgrims and adventurers the imagination knows no bounds. Often also city rivalry and business disputes lead to brawls and intervention from the *visdomini*.

On Sundays and feast days the merchants hear mass said at the altar erected by the Venetian government in the *fondaco*.

When the merchant undertakes to sell his goods he finds that all his transactions must be carried on through a servant of the *fondaco*, the *messeta*. He is not able to choose a particular one of these men, with whom his father may have done business, but draws one, or probably two, by lot.[19] With the *messeta* the merchant presents himself on the market of the *fondaco*. The Venetian buyers also come there. All goods are sold at auction by the *incantadori*, or auctioneers,[20] the *messete* acting as interpreter and intermediary. The clerks from the office of the *visdomini* in the presence of the *messeta* make a record of every transaction in order that the government may collect a sales tax.

After the merchant has sold his goods the next step is to buy up a stock to take home with him. Among the articles for which

[19] Two came to be the regular number in order that one might act as a check on the other, for the temptation to make illegal arrangements with the merchants to the loss of the government must have been great. There were many who sought the position for its remuneration, and at times it was held as a kind of benefice by artists who then hired a subordinate to do the required service (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 212; Simonsfeld, *op. cit.*, pp. 23 ff.).

[20] The number of auctioneers was reduced from forty to twelve in 1335. They had to be able to speak German as well as Italian (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 211; Simonsfeld, *op. cit.*, p. 19).

there is a demand in Nuremberg the luxuries of the East, especially silk and spices, are foremost. He probably wants to buy Venetian manufactures also, such as silk cloth and glassware.[21] As he goes from shop to shop he is accompanied by the *messeta*, who again acts as interpreter and who keeps a record of all the purchases in order that the government may collect a toll from these also.

After all the goods have been sold and all the purchases made for which the merchant has money, or can get credit, he prepares to return to Nuremberg. Even this last step, the packing of his goods, is not left to him. The goods go through the hands of the *pesadori*, or weighers, who weigh and measure them to prevent falsification. Then they are turned over to the *ligadori*, or packers, who roll up the goods in bales and tie them for shipment. The whole process preparatory to departure is supervised by the *messeta* to make sure that nothing is smuggled out of the *fondaco* in the bales.[22]

The merchant has probably spent several weeks or even months in Venice. After he has paid the *fonticarius* for his board and lodging and paid the import and export dues as well as the tolls on sales and purchases at the office of the *visdomini*, the *partadori* place his goods on the gondola and the *barcharuoli* take him back to the mainland. As the goods lie piled up on the wharf, and the gondola again moves off toward the islands, the merchant breathes a sigh of relief, for he is free again.[23] Still he looks to the

[21] Among the more common spices used at the time were pepper, ginger, cumine seed, cinnamon, saffron, etc. Other kindred luxuries were incense and sugar. Among the Venetian manufactures the more common were silk cloth, velvet, and cotton as well as decbrative clothing, glassware, and fine weapons (Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 216; Simonsfeld, *op. cit.*, p. 103).

[22] Heyd, "Das Haus der deutschen Kaufleute in Venedig," *Sybels Historische Zeitschrift*, XXXII, 214; Simonsfeld, *op. cit.*, pp. 19, 24.

[23] For all the exactions, restrictions, and supervision over the merchant the Venetian government gave only one compensation. This was the fact that Venetian merchants were not to compete with German merchants as carriers between Germany and Venice. While this provision assured the German merchants of a monopoly, the action was not disinterested on the part of the Venetian government, for the Germans paid a toll coming in and going out. They were therefore a double source of income to the Venetian treasury (Simonsfeld, *op. cit.*, p. 31).

mountains with a heavy heart, for many a weary mile and many a danger lie between him and his home. Political conditions may have changed in the meantime, and he may have to choose a new road for his return trip. The danger from robbers is as great now or even greater, for the contents of his pack have a greater attraction for the brigand now than on his trip southward. After paying the usual tolls in cash and pepper, if fortune smiles on him he finally arrives at Nuremberg. His risks have been great, his expenses heavy. Now comes his opportunity to recoup himself. Great liabilities demand large profits. The luxury-seeking noble and prelate contribute their share toward defraying the expense of the trip in the high prices which they pay at the fair in Nuremberg.

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CAPITAL PRODUCTION AND CONSUMER-TAKING—A REJOINDER

IF I may, I would like to add one more remark to the discussion,[1] in order to make the object of my first note quite clear.

As originally pointed out by Professor Clark, there exists a certain mechanism connecting capital production and consumer-taking. This fact in itself is undoubtedly a very important one. But in a certain respect it has been misused in the theoretical analysis. The object of my note was to point out this misuse.

In *Economics of Overhead Costs* (p. 390) Clark formulated the description of the mechanism in a proposition which we may here, for convenience of reference, call the first formulation of the acceleration proposition for consumer-taking:

(I) *Acceleration proposition, first formulation:* "The makers of capital equipment *are bound*, in the nature of the case, to suffer an absolute decline in the demand for their products . . . . *whenever* ultimate demand slackens its rate of growth."[2]

In point of principle the proposition (I) is not correct because capital production is made up of two parts, namely, capital production for expansion purposes and capital production for replacement purposes, and proposition (I) only takes account of the first of these parts. In his reply in the *Journal of Political Economy*, December, 1931, Clark therefore modifies the proposition thus:

(II) *Acceleration proposition, second formulation:* "A decline in the rate of increase of consumer-purchase may produce an absolute decline in the demand for long-lived equipment and (in the simplified illustration) must do so unless the changes in the rate of growth of consumer demand are very small."

This formulation is, of course, more correct than the first; but it is not quite satisfactory because it does not express those two fundamental things in regard to which the smallness of the changes in the growth rate of consumer demand must be judged, namely, the depreciation rate and the actual size of the growth rate of consumer-taking. I would prefer the following formulation:

[1] See my note in the *Journal of Political Economy*, October, 1931, and Professor Clark's reply in the December issue.

[2] Italics are mine.

(III) *Acceleration proposition, third formulation:* "A decline in the rate of increase of Consumer-Taking will call forth an absolute decline in the demand for capital goods when and only when the percentage with which the growth rate of Consumer-Taking diminishes per year is larger than the percentage with which the capital goods are worn out per year."

This proposition is what is expressed in formula (5) in my first note.

(III) is the only precise and correct form of the acceleration proposition; but we may, of course, qualify (I) by a suitable *ceteris paribus* clause so as to make also (I) correct in a certain restricted sense. We may, for instance, say that (I) holds good if capital production for replacement purposes is constant. This, it seems, is the essence of Clark's argument in his reply. Thus interpreted, proposition (I) will be of some interest as a means of analyzing the consequences of a *sudden* and *violent* drop in consumer-taking. More precisely stated, proposition (I), formulated with this qualification, tells us that any change in consumer-taking which is such that the effect of this change becomes dominating over the effect of the change in replacement production, will call forth an absolute decline in the total capital production.

When the proposition is qualified in this way, it becomes correct, but then, of course, less striking and less far-reaching than it would have been if it had been true in its unqualified form (I). In particular, when the proposition is correctly stated, it becomes clear that it does *not* explain the turning-point of a regular business cycle. Indeed, if consumer-taking moves cyclically, then (as I showed in my first note) there will be a little interval of time after the point of fastest increase in consumer-taking where total capital production continues to increase, although the rate of increase of consumer-taking has slowed down. This little interval of time around the turning-point in capital production is the critical interval in the business cycle. It is here that the enigma of the business cycle lies. And in this critical interval capital production for expansion purposes *is not the dominating element in total capital production.* There we have just an interval where the percentage change in the growth rate of consumer-taking is very small. The whole problem of the business cycle turning-point just lies in explaining why there comes a moment of time when capital production for expansion ceases to be the secondary, and again becomes the dominating, element. In other words, the critical interval around the turning-point in capital production is just an interval where Clark's argu-

ment about the correctness of (I), on account of the dominating influence of capital production for expansion purposes, *does not* apply.

The turning-point can, indeed, not be proved by any of the foregoing propositions when they are stated correctly. This turning-point can only be proved by taking account of some additional fact which explains why the slackening of consumer-taking takes place in such a particular *manner* as to call forth the decline in capital production. The acceleration proposition only furnishes one condition; but actually the problem contains two variables, namely, the consumer-taking and total capital production (the variables z and w in formula [5] in my first note). However, Professor Clark, Professor Mitchell, and Professor Hansen have actually used the acceleration proposition as a means of proving the turning-point in the business cycle. To point out this misuse was the main object of my note. And I venture to hope that there has been some use in doing so. Thus the essence of the matter discussed is, not the fact that a certain statement needs a quantitative correction, but the fact that one cannot determine two unknowns from a single equation.

I would much regret if this discussion should be made an issue between "mathematical" and "literary" economists. The problems of economics are so large and diversified that there is certainly need for contributions from various types of workers. Professor Clark's remark about the legitimacy of sound formulations adapted to the thinking of the layman in mathematics is so obviously correct that it cannot be discussed.

In my first paper a correction should be made in formula (8). The denominator should read $4\pi^2$ instead of $2\pi^2$, and in formula (9) the lower limit should be 0 instead of 1. I also want to apologize for the slip in the footnote on page 646, where I have quoted Bickerdike's article instead of Clark's.

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BOOK REVIEWS

America Weighs Her Gold. By JAMES HARVEY ROGERS. New Haven: Yale University Press, 1931. Pp. xiii+245. $2.50.

In the words of the author, the purpose of his work is to drag from their dusty hiding-places the unpopular subjects of the balances of international payments, three-cornered trade, and foreign credits, "clothe them in the most gorgeous costumes possible, to 'slam' them, to praise them, and even to pump blood into their veins and air into their lungs." In this way he endeavors to give the reader a glimpse of the strangest international gold situation that the world has ever faced and to give a popularized treatment of the gold problem.

The earlier chapters of the book are devoted to the analysis and interpretation of the balance of international payments, compiled by the United States Department of Commerce, in an effort to point out some of the highly significant influences which they record in the economic life of the world. In the later chapters the author gives consideration to the general, objective, irrational, and little-comprehended balances in which human affairs are being weighed, his main thesis being that the field in which rational control is exercised is exceedingly narrow, the strange and elusive characteristics of the human mind combined with a complicated environment being of such paramount importance that these balances in which human affairs are weighed are largely beyond the control of the innocent and often dismayed weighers and spectators.

After discussing the value, production, consumption, and distribution—or perhaps one should say "maldistribution"—of gold, the author passes to a consideration of the nature of international balances which is explained in a reasonably simple and informing manner, the author using the estimates of Dr. Ray O. Hall, formerly with the Department of Commerce, in preference to the official ones of the Department. Next he examines and points out how the important items, entering the balances, work. With these questions disposed of, the succeeding chapters assume a more dramatic touch, which is reflected in the captions of the various chapters. Chapter iv is "Debts and a Pound of Flesh," the meaning and implications of which are probably

fairly obvious, the author's chief contention being that "for nations, as for individuals, the accumulation of big debts or of big claims on others may change the course of life itself" and that "through such a change, the United States seems to be going," the probability being, in his opinion, that, in the cases in which a pound of flesh is being exacted, the resulting changes have more significant effects upon the life of the creditor than the debtor nation. A decidedly pointed illustration is provided in his account of the dumping of foreign securities, good and bad, through investment bankers, upon the American public which had so recently acquired the investment habit, not to mention other equally dangerous developments which he points out.

Next comes a chapter on "How Uncle Shylock Trades," the burden of which is revealed in the statement: "In our countries, unemployment, poverty and actual starvation are present; and yet, while men walk the streets and cannot find work to earn bread for their hungry families, the corn bins of Europe and the countries overseas are bursting with food that cannot be sold. . . . . Meanwhile, the principal creditor countries refuse to accept goods which the debtor countries have to offer." The author's comments as to how American protective tariffs are constructed and function are quite to the point and should be read by anyone filled with any doubts regarding the subject. Then follows a chapter on "The Golden Spiral," which should be interesting and instructive to the thoughtful, as well as the general, reader. The reviewer was unable, however, to see in the chapter a golden spiral of any sort or any justification for the chapter caption, which appears more intriguing than realistic.

Chapter vii, with the whimsical heading, "The Caterpillars in a Circle," followed by a chapter called "The Circle Breaks, Forms Anew," is a more or less dramatic attempt to point out, by devices not unlike parables (the chief one being the story of J. Henri Fabre's *The Life of the Caterpillar* [1916] and others called "A Blind Man Leads," "A Philosopher Expounds," "A Practical Man Delivers," "Officials Delay," "A King Perspires," "A Worldly Wiseman Describes," "A Politician Distinguishes," "A Candidate Exonerates," "A Patriot Argues," "An 'Expert' Apologizes," and "A Campaigner Jests") that, to one who attempts rationally to interpret the ways of the human animal, his actions are largely incomprehensible, and that where men do attempt to muster human intelligence they usually attempt to prove the altruistic character of both the means employed and the ends in view. Professor Rogers adds, with some feeling, that

"under our pseudo-democratic organization of society, this particular kind of rationalization assumes unusual importance. . . . . The ship of state rocks along with the problems of her difficult navigation receiving rationalistically popular rather than scientifically approximate solutions."

Regarding the remaining chapters called "Deserted," "Depressed," and "Weighed in the Balances," the reviewer is unable to say more in the space allotted than that they are interesting and full of thoughtful, if not alarming, facts regarding the situation facing the world today. The reviewer is forcibly reminded of similar conclusions reached by Sir George Paish in his recent *Way to Recovery*, regarding which there seems to be rather wide agreement among economists. Professor Rogers' book includes an appendix of notes, references, and tables, a series of unusually beautiful charts, and a useful index. The bookmaking is excellent. Besides being interesting and well written, the work is very informing and presents nicely the chief issues involved in the complex problems facing the world today regarding which more and more people wish to be and should be informed. The work deserves and should have a wide reading.

WALTER E. SPAHR

NEW YORK UNIVERSITY

The Banks and Prosperity. By LIONEL D. EDIE. New York: Harper & Bros., 1931. Pp. xi+179. $2.50.

Dr. Edie's little book is a timely contribution to the chief issues being considered today by those who are making a serious effort to diagnose our banking and depression illnesses and to point the way to more rational methods of banking and of combating such extreme business fluctuations as those characterizing recent years. This work of Edie's deserves careful consideration since it represents a point of view held by various responsible authorities who have devoted considerable attention to monetary and banking problems over a period of several years.

Very briefly, Edie's chief contentions are that central banks have come into the possession of powers for economic good or ill "such as no institutions have previously held in capitalistic history"; that the central bankers have developed what he calls "the banker standard," according to which credit is permitted to expand unduly in times of expansion and contract unduly in times of recession, with the result

that the world has been given the most unstable peace-time monetary structure and price level that has existed in the past century; and that the creeds of the "official mind," which he thinks characteristic of central bankers, have led to a negative leadership. This "official mind" places primary emphasis upon non-monetary causes of economic fluctuations; holds that the regulation of the demand for credit is not a function of credit policy of central banks and that the supply of credit cannot be regulated by any economic criterion; and thinks in terms of the non-managed, automatic, nineteenth-century gold standard.

In lieu of all this, Edie hopes to secure a stabilized price level by providing, through legislation, for a 4 per cent annual rate of growth of the volume of credit which he assumes will balance the long-term average annual rate of growth of production in the United States. He contends that such a plan is superior to the proposals made by those who wish to concentrate directly upon stabilization, since the stabilizers, he insists, are vague and can offer no specific data as to how much credit is necessary to stabilize the price level, whereas his plan provides a definite measuring-rod. He condemns, for example, the position taken by the Macmillan Committee in England on the ground that the Committee did not supply a yardstick that would show how much credit is enough. This rate of credit growth proposed by Edie is to be maintained, according to his plan, by the central bankers regulating the reserves of member banks, by the use of the rediscount rate, and by "moral suasion." If the 4 per cent rate of growth per annum of credit is insufficient to meet the requirements of a wave of prosperity, he suggests that the balance of the cyclical expansion would be provided by the cyclical rise in the velocity of outstanding credit. If business starts to recede, the 4 per cent rate of credit extension is to be continued in force. He holds that if the total volume of credit is under control particular uses of credit, as, for example, credit in the stock market, "will tend not to get radically out of balance," and that, if credit is being drawn off into that market, a sharp advance in the rediscount rate will be an effective instrument of control and will not disturb legitimate business. He points out that the link which unites credit growth to gold has been cut by the bankers with disastrous results and that it is important that credit be tied closely to the gold base since the steady growth of gold, at a rate which he contends is almost as great as that of the growth of production, would tend to cause a fairly even growth in credit. In short, he holds that a controlling influence should also be given to reserve ratios between gold and

credit. The last chapter of the book is concerned with the "Passing of the Gold Standard," the author's contention being that "what is transpiring under the surface of things is nothing less than the passing of the gold standard." Edie looks upon his proposal as a twofold program of a production standard built into the gold standard and as one providing a revolutionary change from traditional policies.

The book deals with large and highly controversial issues and is written to carry home to the reader a very fundamental thesis as well as various important and related considerations, many of which the reviewer must pass over, due to limitations of space. In general, the author has brought together, in support of his contentions, opinions of leading banking authorities, particularly those opinions which he gathered through personal interviews while abroad. As a result, the book must be taken as one representing a certain point of view, and certain opinions of leading authorities which the author wished to present, without the supporting statistical or scientific evidence which is necessary to the determination of the validity of such contentions. Regarding many of the chief issues involved, there is no empirical evidence available, and the question resolves itself into a determination of which group of authorities can present a logical plan in the most persuasive manner, since its virtue can be determined, to some extent at least, only after trial.

The reviewer would contend that Dr. Edie's plan involves a reliance upon an assumption of a more definite relationship between the amount of money and credit going into circulation on the one hand, and the response of the price level on the other, than known facts justify; that his so-called "definite yardstick" is likely to prove a handicap rather than a virtue because of its rigidity, whereas the "direct stabilizers" escape this danger since they do not contend that they know just how much credit is needed to stabilize the price level but may expand or contract it (assuming this is possible) as circumstances justify; that there is no way of knowing whether or not the secular trend of production will continue upward at any specific rate; that his contention that quantitative control of credit will take care of qualitative control is not borne out by facts; that his instruments of credit control are incomplete and inadequate; that the weight of evidence is against his contention that the rediscount rate can be raised sharply for the purpose of qualitative control without, at the same time, injuring commerce, trade, and industry; and that there are various other important correctives necessary in our banking structure before the central banking

system can function properly. It is to be understood, however, that the validity of the main issues involved in the discussion of both the author and reviewer, as well as the interpretation to be placed upon the available evidence bearing upon these issues, are largely matters of opinion. The reviewer believes, however, that Dr. Edie has rendered a genuine service by presenting to the general, as well as to the specialized, reader a series of opinions that are well worth his careful consideration during these times when leaders of thought are striving for the proper way out of our present economic morass. The author slipped into a minor error, doubtless inadvertently, in referring (p. 158) to the Coinage Act of 1873 as the Act and Crime Act of 1876.

WALTER E. SPAHR

NEW YORK UNIVERSITY

Prices and Production. By FRIEDRICH A. HAYEK. New York: Macmillan Co., 1932. Pp. xv+112. $2.00.

Preise und Produktion. By FRIEDRICH A. HAYEK. Vienna: Julius Springer. 1931. Pp. xv+121.

Professor Lionel Robbins, in his brief but altogether admirable introduction to the English version of the book under review, suggests that there is "only one work of its kind which has been published in English since the war" with which it can be compared—D. H. Robertson's *Banking Policy and the Price-Level*. If it be understood that the comparison is chiefly one with respect to kind rather than range of interest, and, if it be remembered further that Keynes's *Treatise on Money* appeared only when the manuscript of the English version was almost completed (see p. vii of the German version), the aptness of the comparison will be evident. The appearance, in the meantime, of Keynes's *Treatise*, even if it had not led to the instructive, if somewhat acrimonious, debate between Keynes and Hayek in the pages of *Economica* (beginning with the August, 1931 issue), would have made a comparison of results inevitable.

There would have been comparison, in the first place, upon the basis of Dr. Hayek's first chapter, with respect to the relationship of the two writers to the past of monetary theory and, therefore, to its future. It is impossible to read this chapter of Hayek's—particularly in the German version, which contains a number of bibliographical footnotes (e.g., pp. 2, 20, 24, 30) and amplifications (e.g., pp. 11, 20) that are wanting in the English edition—without being impressed by the fine

feeling which Dr. Hayek shows in the way of scholarly appreciation of the achievements of monetary theory in the past, as well as of discrimination among the various elements which will be joined in the construction of the monetary theory of the future. The difference between Hayek and Keynes in this respect is largely a subtle one of temperament; but the importance of this difference will be recognized by those who have followed the discussions between Keynes and Robertson, on the one hand,[1] and Keynes and Hayek, on the other,[2] in the course of which Keynes has allowed himself the privilege of some sharp remarks with respect to received methods of analyzing problems in the field of monetary theory. We may accept Keynes's disclaimer of any intention to imply that "the older methods," as represented, let us say, by equations of the Fisher type, "would lead us to *wrong* results"; and that he intended to argue only that "they are incapable . . . . of leading us to certain useful results."[3] There is a sense in which this is unquestionably true; indeed, the argument of Dr. Hayek himself (see e.g., pp. 3 ff. of both versions) may be taken as support of such a contention.

This is, however, quite a different thing from saying that the adoption of any new set of equations justifies us in refusing to follow through, with great precision, the changes which are induced in the variables of the older equations when changes in these variables can be shown to be relevant to the problem in hand. One has only to consult the curious equation which Keynes presents on page 239 of the first volume of his *Treatise*, purporting to dispose once and for all of "the relationship between the 'Fisher' equation and the fundamental equations" of his own *Treatise*, and then follow through the controversy between Keynes and Hayek, in the pages of *Economica*, with respect to the part played in the accomplishment of certain processes by changes in the quantity of money or in its velocity ("hoarding")—both of them variables in the older equations—to be convinced that, in insisting upon a description of the changes in these variables which are incidental to changes in the relationship between "saving" and "investment," Dr. Hayek and others who would follow the same line are doing something more than refusing to "step into a new pair of trousers" on the ground that they are "nothing but an embroidered

[1] *Economic Journal* (September, 1931).

[2] *Economica* (August and November, 1931).

[3] *Economic Journal* (September, 1931), p. 419.

version of the old pair which they have been wearing for years."[4] There are those who would prefer the calm scholarship of the whole of Dr. Hayek's first chapter to the curious "relationship" equation of Keynes to which reference has been made, and would prefer Hayek's modest statement at the end of his chapter to the effect that "all results we obtain at this stage [i.e., the stage represented by the monetary theory of the future as he sees it] should be regarded as tentative," to the swinging and assured brilliance of Keynes when he insists that we shall jump at once into his new, and in many respects looser, pair of trousers without being able to feel that the old ones are at hand to protect us when the weather is such as to make us long for a pair that will fit more snugly.

We come now to the positive part of Dr. Hayek's analysis—that presented on pages 45 ff. of the English version (pp. 49 ff. of the German)—and its relation to the analysis of Keynes. Mr. Keynes has suggested[5] that his own theory and Hayek's occupy different *terrains*. I have no intention here of establishing the various senses in which this could be said to be true, and in what sense it would be false. It is sufficient to point out the contrast between Hayek's general line of argument and that of Keynes which appears when it is recognized that the element of disturbance which is introduced into the situation in the case described by Hayek—which may be taken as representing a divergence between the total of (voluntary) "saving" and "investment"—viz., the change in the "structure of production" which is represented by the temporary lengthening of the productive process by means of a "forced" retrenchment of consumption as the result of the injection of an increased "amount of money in circulation," is, under certain circumstances, perfectly compatible with an unchanged general level of prices. It would not be fair to Keynes to suggest that he arrived at a position which is on the whole favorable to "a policy which . . . aims at the stability of purchasing power as its ideal objective,"[6] without some canvassing of other possibilities. There can be no question, however, that the difference in emphasis between the two writers with respect to the desirability of a stabilization of the price level is so great as to be regarded as virtually categorical.

Those who, like the present reviewer, agree with Hayek that complacency with respect to the "stability" of the general industrial situa-

[4] Keynes, *Economica* (November, 1931), p. 390.

[5] *Ibid.*, p. 395.

[6] *Treatise*, II, 163.

tion during the last boom was largely engendered by a refusal to look beneath the deceptive "stability" of general prices, can hardly fail to recognize in his general argument an emphasis which cannot be overdone. If one has scruples with respect to this general argument, it is not because it is false, but rather because there is a danger that, despite the modesty with which Hayek presents his thesis, it may be taken as implying that a tendency toward industrial instability under a régime of stable "general" prices can derive only from the type of phenomenon which Hayek describes. In truth, the possibilities of maladjustment—deriving, as they may, from the peculiarities of the wage system and of machine production, the vagaries of entrepreneurial judgment under a competitive system and a host of other factors—would still be enormous, even if production were financed entirely from "voluntary" savings. I find nothing in either version of Hayek's book —except, perhaps, for an occasional phrase which may be taken as representing merely a difference of opinion with respect to relative emphasis—which would indicate that Hayek himself would not admit these other theoretical possibilities into that general analytical arsenal which will ultimately enable us to understand with some degree of completeness the phenomenon that we call the business cycle. In view of this fact, his thesis must be accepted as a contribution to the common store of understanding which cannot be ignored even by those who would insist that it is not a complete explanation of the phenomenon under discussion.

Dr. Hayek's last chapter presents his proposals with respect to central banking policy. To those not yet familiar with the general lines of his argument, his concrete proposal that the banking authorities should aim at a policy which will keep money "neutral" with respect to economic processes by leaving "the amount of the circulation unchanged" (e.g., p. 108 of the English version; p. 117 of the German), will appear an extraordinary retrogression in the light both of the traditional arguments with respect to the virtues of an "elastic currency" and of the glorification of the possibilities of "management" which has found what is perhaps its most elaborate presentation in Keynes's *Treatise*.

Yet it must be pointed out, first of all, that Hayek's proposal is not in as complete contrast to the "teachings of experience" with respect to the desirability of an elastic currency as might appear at first glance. The need for "expansion" of the "currency" to meet the internal drain is, for example, recognized tacitly by Hayek's argument (pp. 95 ff. of

the English version; pp. 105 ff. of the German) to the effect that we must be careful to avoid "a confusion between the demand for particular kinds of currency and the demand for money in general." Similarly, Dr. Hayek recognizes the need for "expansion" in order to take care of those particular types of change in the "demand for money" which may be registered in a change in the velocity of circulation of money (pp. 106 ff. of the English; pp. 115 ff. of the German), or in those changes in what may be characterized as the "velocity of circulation of goods" which are due to a change in the number of middlemen's sales (pp. 101 ff. of the English; pp. 111 ff. of the German). Finally, it is even reasonable to suppose, in the light of Dr. Hayek's discussion of the difference between constancy in the amount of what Mr. Keynes has called "Central Bank Money" and the total amount of money (Hayek, pp. 98 ff. of the English; pp. 108 ff. of the German), that while Hayek would certainly "resist the well-meaning but dangerous proposals to fight depression by a 'little inflation' " (p. 109, English; p. 118, German), he might approve of central bank intervention intended to counteract a member-bank deflation, the theoretical possibility of which at least he seems willing to recognize when (p. xi of the German version) he speaks of the possibility of a "secondary deflationary process," and for the existence of which in America, beginning with the last few months of 1931, there seems to be a considerable amount of evidence.

What is more important to recognize, however, is that the whole of the argument of Dr. Hayek's last chapter is presented with the greatest modesty, on the ground that "the territory into which it makes a few tentative steps is little explored and particularly difficult" (p. xv of the English; p. viii of the German). He makes no attempt to minimize the difficulties in the way of making this policy of "neutral money" a "practical maxim of currency policy" (p. 108, English; p. 117, German). On the contrary,

> the only practical maxim for monetary policy to be derived from our considerations is probably the negative one that the simple fact of an increase of production and trade forms no justification for an expansion of credit, and that—save in an acute crisis—bankers need not be afraid to harm production by overcaution, even during times of general depression.

Put in these terms, Dr. Hayek's general argument does not preclude the possibility that, at some day in the distant future, when our knowledge of the causes of industrial fluctuations will be a hundred times as extensive as it is today, it is barely conceivable that central

banking authorities, informed with a godlike wisdom, may depart from the possibility of strict "neutrality" and use the powerful weapons of credit expansion and credit contraction which they will have at their disposal with a precision with respect to its direction and its amount undreamed of at the present day. Dr. Hayek argues only that we are "yet very far from the day when our knowledge of these problems will be sufficient to justify any drastic changes" in credit policy of the type recommended by those who are confident that the riddle of the business cycle has been solved in its entirety. For this, a conclusion perfectly in keeping with the modest pretensions of this very valuable little book, Dr. Hayek deserves the thanks of all serious students of monetary theory.

ARTHUR W. MARGET

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Some Aspects of the Tariff Question. By FRANK W. TAUSSIG. Cambridge: Harvard University Press. 1931. Pp. xiii+499. $4.00.

All students of tariff theory and of American tariff history will be interested in this third edition of Professor Taussig's valuable work. It is apparently a reprint from the plates of the two previous editions, with minor modifications, plus 122 pages of new material which covers 1910–30 developments of the industries discussed in the previous editions.

It will be recalled that, in the earlier editions, Part I discussed some fundamental principles in connection with duties, prices, young industries, and comparative advantage; Parts II, III, and IV were devoted to the industrial histories of sugar, iron and steel, and textiles. Under textiles, Professor Taussig discussed American silk, cotton, and woolen manufactures, as well as wool production. Some comparisons were made with similar competing industries in foreign countries, but the center of interest throughout was the effect of domestic import duties upon the development of these industries in the United States. Besides carrying the histories of the industries discussed in the earlier editions up to 1930, the new part includes also a chapter on "the recent astounding growth of rayon manufacture." The Preface to the new edition states that Dr. H. D. White of Harvard University "has carried much the largest part of the labor of tracing in detail the changes described in Part V."

The first and last sentences of Part V state the theme that runs through all of the seven chapters of new material. The new part begins thus: "The sugar situation during the twenty years 1910–30 underwent extraordinary changes, and yet, as regards the effects of the import duties and the other fundamental matters considered in Part II, nothing new appeared." The conclusion of the whole book is that:

> No changes took place that modify in essential respects the general conclusions reached when this book was published in 1915. The striking case of rayon (chap. xxv) does indeed show the rise of an industry entirely new, under the influence of protection. But its history, extraordinary though it is, suggests no conclusions of a novel sort. The reasoning applied to other cases is not modified, rather confirmed. On the whole, *plus ça change, plus c'est la même chose.*

Parts II–IV of the earlier edition elaborated and proved the soundness of the principles laid down in Part I; now Part V, covering the experiences of about twenty additional years in the same industries and in one new industry, attests again the validity of these principles.

But one should not infer that the present edition offers nothing new; though principles may be immutable, the facts to which they pertain are ever changing. The developments in these industries as traced by Professor Taussig and Dr. White are fascinating indeed, particularly to those interested in the evolution of American industrial technique and management.

This excellent exposition of the operation of the tariff will give great satisfaction to both protectionists and free traders. But perhaps instructors in courses dealing with the tariff have the greatest obligation to Professor Taussig for the preparation of this new edition. His clarity and excellence of style are equaled by few economists. He has a rare talent of being persuasive and convincing without being irritating to college students. In the November issue of the *Atlantic Monthly* Professor Taussig gives a hint as to why most of these students revert to the faiths of their fathers soon after leaving college, but let us hope that there is some net progress as years pass despite all that we see about us in the world today.

ROY G. BLAKEY

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Die Übererzeugung in der Welthandelsware Kaffee im Zeitraum von 1790–1929. By HANS ROTH. Jena: Verlag von Gustav Fischer, 1929. No. 2 of *Beiträge zur Erforschung der wirtschaftlichen Wechsellagen Aufschwung, Krise, Stockung.* Pp. viii+146. Rm. 6.

This is the first volume to appear in a series of studies in the field of business fluctuations, made under the direction of Professor Arthur Spiethoff of the University of Bonn. An announcement in the book tells of the projected publication of twelve more studies in the same series.

Well over half of the book is devoted to a historical treatment of production and prices since 1790. This the author divides into four main periods: from 1790 to 1830, when there was a free market and coffee production was fairly evenly divided between the West Indies and Java; from 1830 to 1869, when the coffee market was subject to considerable control through the operations of the Dutch Trading Company in Java; from 1870 to 1907, when there was no artificial control of the market, although a preponderant share of the world's coffee was coming from Brazil; and from 1907 to 1929, during most of which time the Brazilian authorities were attempting to control the market. Although there is no extended discussion of the working of the various valorization plans, considerable material is introduced which bears on Brazil's attempt to control coffee prices.

This historical review is more than a statistical record, and contains some discriminating analysis of the factors which have influenced production and prices. The author shows how the shift of coffee production from the tropics to the more temperate climate of Brazil has increased crop fluctuations due to uncertain weather conditions; how labor conditions in Java and Brazil have had important effects on production; and how the fluctuations of the Brazilian exchange have at one time stimulated production, at another time brought low prices in Brazil, independently of changes in the gold price of coffee in the world-market. The fact, however, that the author approaches his subject with the bias of a student of economic fluctuations makes him instinctively regard every change in price as part of a cycle of overproduction, equality of supply and demand, and underproduction. Too much is demanded of the theory of economic rhythm. The test of underproduction or overproduction is simply deviation from price stability, and the possibility of a secular trend in prices is hardly considered.

An excellent discussion of the relation between prices and consumption is given in the latter part of the book. The author points out that the increase in coffee consumption has been about six times as great in times of falling prices as in times of rising prices, which would indicate that there is much greater elasticity than is commonly supposed in the demand for coffee. Hence, he believes that any attempt on the part of the Brazilian authorities to maintain the high prices of 1928 and the years immediately preceding would be very unfortunate, although he favors an attempt to prevent too great a collapse of prices. From a statistical analysis, based on German experience, the conclusion is reached that at high prices the demand for coffee is very inelastic in response to temporary drops in price but that, when prices have reached a lower level, further price declines bring a market increase in consumption and even small price increases curtail consumption.

The author's findings from the historical study are that fluctuations in coffee prices and general economic fluctuations have not coincided. With one exception, in 1882, he does not believe that depressions in the coffee trade have had any appreciable influence on general business conditions, and in most cases he finds that the influence of general business conditions on coffee prices has not been of great importance.

FRANK WHITSON FETTER

PRINCETON UNIVERSITY

University Education for Business. By JAMES H. S. BOSSARD and J. FREDERIC DEWHURST. Philadelphia: University of Pennsylvania Press, 1931. Pp. xii+578. $5.00.

This study of education for business on the university level has a particular timeliness and a peculiar appropriateness. It is timely in appearing in the year which marks the fiftieth anniversary of the Wharton School of Commerce and Finance of the University of Pennsylvania, founded by Joseph Wharton in 1881 as the first collegiate school of business in the United States. It is appropriate that it should be published by the University of Pennsylvania Press and be presented as an investigation undertaken for the faculty of the Wharton School and at the suggestion of its dean.

The book as a whole is a valuable contribution to the literature on business education, although to the reviewer the sections seem to be of somewhat varying merit and value and to constitute, when placed between two covers, something of an assembly rather than the carefully

organized and unified development of a single theme. The chapters of this volume are focused on five major topics: "Modern Business and Its Significance for Higher Education"; "Study of a Group of Business School Graduates"; "The Evolution of Higher Education for Business"; "The Curricula of the Collegiate Schools of Business"; and "Problems of Personnel and Teaching Methods." These topics are dealt with in somewhat varying ways.

In handling the first topic, the authors depend in part upon an analysis of modern business, fortified extensively by the general testimony of persons prominent in business, political, and economic life. On the basis of their analysis and evidence the authors conclude that business has changed in character during the past three decades in a way which requires of business men, as contrasted with an earlier time, an increased knowledge of human relationships, a much greater familarity with affairs outside of the business unit, and in general a professional view of management.

The study of the group of business graduates is an interesting and intensive examination of the Wharton School graduates' histories in occupational preferences, undergraduate employment, campus activities, occupational experience, and opinions as to college training. The detailed conclusions on studies, experiences, and salaries, resulting from this analysis, cannot be presented here. The more important observations, however, include (*a*) the belief that the curriculum should be so designed that every student would be required to follow an "integrated and co-ordinated core of required subjects" with a moderate number of elective subjects, chiefly in the later years; (*b*) the belief that the curriculum should recognize the educational necessity of broad background and an appreciation of the social and ethical aspects of the material studied. It is interesting also that some 56 per cent of the nearly 1,700 alumni studied have taken some form of educational work since graduation.

The third major section deals with the evolution of higher education for business. This section seems to add relatively little that is new and to fit in somewhat awkwardly at the point at which it is placed in the volume. The treatment of the curricula of the collegiate schools of business which follows is a detailed analysis of that subject based primarily upon the curricula organization of the American Association of Collegiate Schools of Business. General, as well as business, studies are discussed.

The final section, devoted to problems of personnel and teaching

methods, has much that will be interesting and valuable to those directly concerned with the administration of university education for business—the classification of professorial rank, the degrees which are most often held, the extent of professional experience, the general makeup of faculties, the sources of teaching staff, and professional salary scales. (The authors observe that college of commerce teachers are not paid as well as teachers in education, law, medicine, and theology.) Teaching loads and their relationships to salaries, the selection of students, the organization of curricula, the emphasis upon "technical," "general," and "liberal," teaching versus research and teaching methods and their problems are all touched upon in ways which will repay examination by administrative officers. No study has before appeared which has made as detailed an examination of certain matters as is presented here.

The more general conclusions of the book are, to the reviewer, for the most part, more confirmatory of certain points of view than they are novel. This is natural enough perhaps in a field to which a great deal of thought has been given. In the finding, for example, that an adequate program of training requires the preparation of students for broad responsibilities rather than for narrow routine, there is the restatement of a view which has been expressed for at least ten years by more than one student of business education. Nor is there greater novelty in the suggestion that business may be regarded as a profession. Regardless of the degree to which the creed has been realized, the notion that business is a profession and that training for it should be professional in character has been repeatedly voiced. Nevertheless, it is, at least to the reviewer, more than a little gratifying that these investigators, basing their conclusions on reports from a great number of graduates of the University of Pennsylvania as well as from business men generally, should, after mature reflection, find that those who have preached for collegiate business training a doctrine of breadth and a philosophy of broad understanding of relationships were justified in their faith in a day when evidence was necessarily incomplete.

One observation of a general character, however, is definitely in the realm of the new rather than of the reaffirming. This is the suggestion (and in the judgment of the reviewer a valuable one) of a program of business training "centering around the development of personality." While in discussions of general education this idea has played a central part and has, indeed, found some institutional expression, it has had a minimum of thought and/or application in education for business. The

suggestion is of importance because, as the authors state, "business places a particular premium upon personality."

It is obvious that business personality may be interpreted as meaning nothing more than a collection of agreeable traits and habits. But real study of the personality traits which give success in business management and direction (not those of the scientific or sales staff) would be panning of pay dirt. There are those who content that business management is a predatory activity, as well as those who believe that it is primarily the exercise of a well-dressed amiability. The investigation of these and other personality hypotheses would be valuable. It is possible that the predatory use the amiable or that the amiable are predatory unwittingly. More light on the interplay of these and other attitudes, one upon another, as they work in business management would be interesting.

LEVERETT S. LYON

THE BROOKINGS INSTITUTION

Grundlinien der Geldtheorie. By GUSTAVO DEL VECCHIO. Tübingen: Verlag von J. C. B. Mohr (Paul Siebeck), 1930. Pp. xii+158.

The writings of Gustavo del Vecchio on the theory of money, credit, and interest cannot have escaped the attention of those who are familiar with the outstanding contributions in these fields which have been published during the last two decades by the *Giornale degli economisti*, of which Del Vecchio is now one of the editors. On more than one occasion, Del Vecchio himself promised a summary restatement of his writings in these fields; and the announcement of a monograph by him under the title *Fundamental Outlines of Monetary Theory* gave hope that such a restatement had finally appeared. It seemed, moreover, that, in introducing Del Vecchio as its representative to non-Italian audiences, Italian monetary literature would be putting its best foot forward; for the qualities which he has shown consistently in his writings—the firm mastery of the literature, obvious even when the author refrains from discussing specific authors by name, the wide range of interests and the fresh choice of problems—would justify characterizing him as being, with the possible exception of Marco Fanno, Italy's most eminent monetary theorist of the present day.

Yet one is forced, with much regret, to fear that these hopes will probably prove to be greatly disappointed by the volume under review.

What we have here is not a complete re-writing of the essential elements of Del Vecchio's monetary theory, but an attempt to avoid such a re-writing by the deliberate clipping of pages and paragraphs from his earliest writings to his latest, and the piecing of them together without any editorial indication either of the origin of the specific fragments thus patched together or of the nature of the sections omitted. This reviewer, through previous acquaintance with Del Vecchio's writings, was able to identify the origin of virtually all the passages included in the extraordinary patchwork which is now presented to the public; but the casual reader, coming perhaps upon the name of Del Vecchio for the first time, cannot be expected to do likewise.

The net result of this fact, from the standpoint of one anxious that justice shall be done to a writer of the stature of Del Vecchio, can only be regarded as unfortunate. The choppiness and incoherence of the argument in the present version—an inevitable result of its curious method of compilation—unfair, as it is, to Del Vecchio's original, is the least of the drawbacks of the book under review. The really important fact, of which most readers of the German version can hardly be expected to be aware, is that a straightforward reading of this version, as it stands, can give only a distorted picture of the nature of Del Vecchio's contributions to the theory of money and interest and of his place among contemporary theorists in the field.

In the first place, the absence of any indication with respect to the original date of publication of the various parts of the book is bound to make for injustice in the evaluation of Del Vecchio's sense of what is important and what is not important for the future development of monetary theory. Much more important, however, is the fact that the ruthless deletion of whole paragraphs and sections of particular essays will probably obscure from the casual reader the real meaning of much of Del Vecchio's argument. Nor is this all. It happens that even the original version of these writings was characterized by a fondness for aphoristic and paradoxical statement, which opens wide the door for misinterpretation at the hands of those who will tend to read into these utterances more than is warranted by the context or by the terms of Del Vecchio's general argument.

The danger of misinterpretation of the author's position, as the result of the spotty and inadequate scheme of selection of passages for inclusion in the present volume, is nowhere greater than in the second section of the book, which is entitled "Quantity and Price of the Credit Offered by Banks." Yet nowhere in the whole of Del Vecchio's writings

is there greater need of seeing to it that he is not misunderstood. For the main portion of this central section is nothing more nor less than a condensation of that work of Del Vecchio which, taken in conjunction with certain of the author's supplementary studies—in particular, his *General Outlines of the Theory of Interest* (*Lineamenti generali della teoria dell' interesse*)—may be regarded as his most important contribution to the whole field of the theory of money, credit, and interest—viz., his "Theory of the Discount-Rate" ("Teoria dello sconto"). So important is this contribution, and so real is the possibility that the casual reader of the present version may miss its central implications almost completely, that the present reviewer has thought it best to use the space allotted to him for his review to warn any reader of this book who might be inclined to take issue with some of its aphorisms that it would be wiser to study at first hand, chiefly in the pages of the *Giornale degli economisti* from 1909 to 1928, but also in the pages of the author's *Il capitale disponibile* (1911) and his *Lezioni di economia pura* and *Lezioni di economia applicata*, the writings of one of the most stimulating and suggestive among monetary theorists of the present day.

It should hardly be necessary to add, as a final word, that nothing in this review should be taken as advising those unfamiliar with Italian, but familiar with German, to ignore this version entirely. A reading of it, even in its present form, should prove a stimulating exercise to every serious student of the subject. It is only out of considerations of fairness to the author that the reader has been warned that no final judgment should be attempted until the German version has been compared with the Italian original.

ARTHUR W. MARGET

UNIVERSITY OF MINNESOTA

The American Tariff and Oriental Trade. By PHILIP G. WRIGHT. Chicago: University of Chicago Press (For the American Council of the Institute of Pacific Relations), 1931. Pp. 177. $2.00.

This small volume was prepared for the 1931 conference of the Institute of Pacific Relations. In his opening paragraph the author limits himself to China and Japan. As a matter of fact, most of the study is given over to Japan. Only one chapter of the eleven deals exclusively with China, and the Chinese background is much less adequately sketched than is the Japanese. His subject is a rather narrow

one, but its ramifications are wide. We are presented with precise information on matters which involve, before we are through, the largest problems of international relations.

Foreign trade plays a part of peculiar importance in Japanese industrialization. Japan's markets and the sources of her raw materials lie beyond her boundaries. She is therefore "peculiarly vulnerable to vicissitudes in foreign commercial policy." This necessary foreign trade is very largely with the United States. As Mr. Wright points out, Japanese raw-silk production and American silk-weaving have grown up together. The world affords no better example of what is meant by international economic interdependence. The United States took no less than 94.5 per cent of Japan's exports of raw silk in 1927 and 78.9 per cent of her exports of tea. In the nineteenth century China was the land of tea and silk; in the twentieth, it is Japan. Now tea and silk enter the United States free of duty. If we add certain other duty-free raw materials we discover that no less than 81 per cent of Japan's exports to the United States enter the country untaxed. Japan's "vulnerability" in the case of the United States depends upon American willingness to forego important raw materials. Mr. Wright might have made more of this point, but he was after another and a more important one.

If nations exchanged raw materials and nothing else, the protectionist would have an easier time. What is more, he could demonstrate to a wondering world that high tariffs and duty-free imports go together. He could be all things to all men, giving the home manufactuere protection of the greatest altitude and pointing out to the skeptic that trade is practically duty free. He would have his troubles, as Mr. Wright points out in his discussion of vegetable oils: but he would come off fairly well.

Japan's problems, however, in so far as they may be solved by industrialization, are those of finding markets for finished manufactures to pay for her raw materials and foodstuffs. Tariffs, in other words, must, in part, be judged by the trade which they destroy or by the trade which they prevent. Here Mr. Wright is able to set forth facts which dispose of the myth of liberal treatment of Japanese exports.

In fact, American tariff policy, especially in the Tariff Act of 1930, toward certain Japanese products moves the author to vigorous language. "It is preposterous to suppose," he says after considering certain "ferocious" changes in duty made in this act, "that Congress with definite purpose deliberately set out to bring distress to Japanese la-

borers, or deprivation to American children, or wantonly to increase duties on non-competitive commodities." He does not doubt that Congress did these things; it is merely that they were not done deliberately but are rather the outcome of the process of tariff-making in a modern democracy with representative government.

The conclusion of greatest significance which the author draws from his examination of the Japanese-American case is that national tariffs are matters of international concern. "Probably," he says, "the international effects of national tariffs present the most serious aspect of the whole tariff problem." Japan, no doubt, offers as good an example as one may find of the truth of this generalization. The author finds that the tariff problem is the more serious when the tariff policy of a particular nation is subject to violent and sudden changes.

He seems more inclined to hope for an extension of international law or of international agreements to cover tariffs than for any modification within the various countries of a nationalistic economic policy. International agreement, a tariff truce, is no doubt to be desired; but one may question whether a rising tide of economic nationalism can be turned by international agreement; and one may fear, in view of the past history of Japan and the United States, that the seed sowed in this volume may fall upon stony ground—or, in any case, among thorns.

It is not tariffs alone, one may add, that offer hazards to the rising industrialism of Japan. Her silk is a product peculiarly liable to fluctuations in demand, and her cotton textiles are meeting serious competition in China, for cotton milling is usually the first industry to find a secure place in an undeveloped country. The precariousness of Japan's position probably lies beyond the power of any tariff policy to remedy, though the United States and China may make it worse.

The author records the recent development of the doctrine of competition with American commodities to such a height of absurdity that "it has been seriously proposed to place a duty on imported bananas in order to protect American apple growers." Upon this principle we may look for a proposal to place a duty on Japanese raw silk for the benefit and protection of the American cotton farmer and cotton manufacturer. The Japanese silk-growers may be obliged to assume the risks of changing styles in America, but style has a power of its own and they may leave it to the women of America to dispose of any such proposal when it is made.

The research program of the Institute of Pacific Relations calls for

further study of the problem of tariffs and trade. Mr. Wright has made an excellent beginning. Rising nationalism in the Far East and the continued enthusiasm for unreasonable protectionism ought to be subjected to the cooling breeze of objective study.

C. F. REMER

UNIVERSITY OF MICHIGAN

Rural Banking Reform. By CHARLES WALLACE COLLINS. New York: Macmillan Co., 1931. Pp. vii+187. $2.00.

Interest in branch banking in the United States is largely a function of the business cycle. Possibly in the last few years it has been more directly associated with the agricultural cycle but this is a phase of the general cycle. In periods of prosperity and few bank failures the question of branch banking becomes of less significance in the public eye; in periods of depression and numerous failures it obtains widespread discussion. Mr. Collins' book, therefore, makes a timely appearance.

After giving a brief history of the development of banking in the United States the author passes on to discuss such matters as city banking, rural banking, branch banking, group banking, chain banking, and allied topics. He concludes with a discussion of the position of the New York City banks, and the power of the federal government over banking. The book, although supported from primary sources, is not a "research" book and is quite definitely a general discussion and presentation of certain views on the banking system of the United States. In brief, his thesis is that the national banking system is losing ground relatively because of the competition of the less rigorous state charters, that the unit form of banking has not met and cannot meet rural needs, and that the solution is to be found in branch banking.

With respect to the first point it does appear from the evidence given, which is not elaborate, that quantitatively at least the position of the national banking system is becoming relatively weaker. On a priori grounds it is almost what one would expect for it is one of the unfortunate effects of competition, in finance at least, that the lower standards seem to pull down the higher instead of the higher raising the lower. The essential point is that the more lax banking laws are, the greater is the opportunity for immediate profit, and so there is always a considerable and constant pressure for the weakening of banking laws and the leveling of competitive positions. Unfortunately all the

leveling appears downward, whereas the whole trend, from the public viewpoint, should be upward. It is probably not too much to say that much of the present banking trouble in the United States is owing to the fact that many banks thought they could go with impunity beyond what custom and experience had established as the boundaries of sound banking.

In considering the second point it cannot be doubted that for the rural bank the problem of getting a proper diversification of loans is an exceedingly difficult one. A local bank in an agricultural area must depend primarily on that district for most of its business. It is possible for it to place money in other areas through correspondent banks but this can be done only to a limited extent and at the cost of a lower return. The problem is not only to get diversification but also to get good loans; often the country bank is forced to make loans with a greater risk because better risks are not available and also because the higher earnings are needed. Undoubtedly this is a weak point in country banking, and the disappearance of the last Canadian bank which in any degree could be considered a country bank is evidence that a country bank with branches is in much the same position as one without branches.

There can be little doubt that nation-wide branch banking would cure many of the troubles of which Mr. Collins complains. In the first place, if the national banks were permitted branches without any restrictions, the superiority of the national charter over the state charter would be very great and should be sufficient to permit a substantial tightening of the National Bank Act. A national bank would then be able to have branches from New York to San Francisco. No state charter could meet this and the national banks would gain an overwhelming superiority in the United States' banking system. In the second place, the rural unit bank would tend to become a branch of a large bank and the community would get the services and strength of a metropolitan bank, which is what the rural unit bank cannot give. Thus the two points of difficulty in the present system would be met.

It should be remembered, however, that branch banking brings its own problems. They are not discussed by Mr. Collins and it is probable that they are not as serious as the present unit bank problems. The lack of contact and sympathy with the local community, the tendency for the bank to become larger and more "financial," the draining of funds from one area to another, and the cry of monopoly are some points raised by branch banking. The form of organization, however,

cannot be any substitute for caution and intelligence in the management of the system.

Yet to one accustomed to a branch system and quite aware of its defects, the opposition in the United States to branch banking seems something of a fetish. Branch banking, despite its abuses, appears to be the most efficient form of banking and is the predominant form of banking in the world today. The United States is the only important country with another system and this system is maintained only by constant legislative bolstering. In light of the experience of the United States with banking losses in the last few years, the advantages of the unit banking system are being purchased at too high a social cost. If a change should ever be made and branch banking accepted, it is to be hoped that the change will be sufficiently gradual to permit the technique of branch banking to be developed and learned.

One wonders why the experience of Canada—a country so very similar to the United States—has not been drawn upon more. The Canadian banking system is not without defects but in this respect it should be a most valuable guide. If anyone wishes to see a miniature of what branch banking would ultimately mean in the United States he has only to look at the Canadian system. But such a look, however, should be something more than a distant glance and the repetition of the hoary *clichés* on branch banking.

In conclusion, it may be said that, to anyone interested in a readable and intelligent, though simple, presentation of some aspects of unit banking problems, this book of Mr. Collins can be commended.

C. A. CURTIS

QUEEN'S UNIVERSITY

Textile Unionism and the South, by GEORGE SINCLAIR MITCHELL. Chapel Hill: University of North Carolina Press, 1931. Pp. ix +92. $1.00.

The strike in the cotton mills of Danville, Virginia, came to an inglorious close for labor early in 1930 and ended a wave of labor uprisings in southern textile centers. Now that emotions are subdued after some months of peace on the southern textile front, we are in a state of mind to review dispassionately the whole history of textile union effort in the South. Mr. Mitchell's book appears, therefore, at an opportune time.

This book of only 92 pages covers the entire history of the southern

textile union movement from 1886 to 1930. It opens with a history of textile unions in the North, which is followed by a chapter on southern textile union efforts up to 1921, and a short chapter on recent organization activities in southern textile centers from 1928 to 1930. The author gives his conclusions in a few pages which consist of a list of the factors favorable and unfavorable to the movement in the South.

The most valuable part of the book deals with efforts to organize textile operatives in southern mills up to 1921. Based as this review is on first sources, it constitutes a real contribution to studies on southern unionism, and it is regrettable that this section of the volume was not developed more fully. It is a melancholy record of the destruction of unions with the defeat of strike after strike, in spite of the fact that the movement gained a large membership and considerable strength for periods at a time.

Danville workers were still out on strike when the book went to the printer, and the discussion of unionization activities in connection with the numerous strikes of 1928 to 1930 is therefore incomplete. However, most of the labor disturbances were over at the time, and one might expect a more complete statement of this phase of the history. In view of the extent and significance of this unsuccessful attempt at organization on the labor situation in the South, this part of the volume is distinctly disappointing. It is much too sketchy and not nearly as thorough as other reports that have been published.

While the history of the textile union movement in the North may be useful by way of drawing comparisons between the two movements in the respective areas, it occupies too large a place in this small volume.

The author's conclusions are given with little interpretation of this long history of efforts to organize southern textile workers. In view of the virtual defeat of the movement which goes back nearly half a century, much light might have been thrown on the unorganized state of southern textile workers by analyzing more fully the factors responsible for this condition.

The main defect of the book lies in the fact that it attempts too much. While the study is a contribution to the growing literature on the southern labor movement, it is too slim a volume for the subject it treats, and we are still in need of a history of southern textile unionism.

G. T. SCHWENNING

UNIVERSITY OF NORTH CAROLINA

Soviet Policy in Public Finance. By GREGORY Y. SOKOLNIKOV and ASSOCIATES. Translated by ELENA VARNECK; edited by LINCOLN HUTCHINSON and CARL C. PLEHN. Stanford University: Stanford University Press, 1931. Pp. xiv+470. $4.00.

This collection of articles on public finance in Russia constitutes a valuable piece of salvage from the wreckage of an ambitious and promising undertaking initiated by Professors Frank A. Golder and Lincoln Hutchinson. The original plan contemplated a far-reaching study of the development of Soviet policy from 1917, to be carried out through the co-operation of Soviet scholars, scientists, and administrators with American economists. The Soviet government at first expressed entire willingness to co-operate in the undertaking and a beginning was made by inaugurating a study of Soviet agricultural policy. The American collaborators on their part made an oral agreement with the Soviet government that the results of this study would not be published without the consent of the Soviet government. A Russian agricultural economist was given permission by the Soviet government to come to the United States for the purpose of collaborating in the preparation of a report on Soviet agriculture. The Soviet economist worked with the group at Stanford University with the result that this study was completed four years ago. The Soviet government has not, however, given its permission for the publication of this report. This unpublished report on agriculture remains the only one which was carried out according to the plan of the initiators.

The circumstances outlined above account for the peculiar relation between the authors and the editors of the book under review. It was written under the direction of Mr. Sokolnikov, and was sent to the American collaborators for publication, without any opportunity for the American economists to participate in the preparation of the report at all. Neither was it possible to obtain access to the sources upon which the book is based.

The book is published therefore with a general *caveat* on the part of the editors to the effect that they do not by any means represent it to be an objective or unbiased account. The editors did feel however that it had a value such as to merit publication and with that judgment the reviewer is in complete agreement. The editors have gone farther than the duties of editorship usually entail and have endeavored, largely by the device of footnotes based on internal criticism of the data, to call the attention of the readers to statistical discrepan-

cies and to conclusions of the authors which appear difficult to substantiate by the data. In the case of some chapters the editors have even attempted to summarize in an initial footnote the high lights of a chapter. This has the effect of increasing the usefulness of the book for quick reference. There is some overlapping of material due to each chapter having been prepared as an entity by separate authors.

The study covers public finance in Russia from the decade prior to the World War down to 1928. It is particularly valuable on account of its description of the relation between the federal and local budgets and for the portion dealing with the state budget in relation to industry and in relation to planned economy.

CALVIN B. HOOVER

DUKE UNIVERSITY

The Black Worker. By STERLING D. SPERO and ABRAM L. HARRIS. New York: Columbia University Press, 1931. Pp. x+509. $4.50.

The labor supply of the United States has been augmented from time to time by the accretion of new strata of workers. The Negro is the latest. Industry in the North has relied on white labor, most of it being immigrant labor. But the war, which not only abolished immigration but actually drained away a considerable portion of the immigrants who returned to serve their respective countries, gave the Negro his first important chance. Since then about one million Negroes have migrated to the industrial centers of the North. It is with the problems which this migration has brought into focus that the authors of *The Black Worker* concern themselves.

Like the immigrant, the Negro has found it necessary to start at the bottom rungs of the industrial ladder. A few have found semi-skilled jobs, but the great majority must be content with unskilled jobs "not wanted by native Americans or Americanized foreign-born whites." And it might be added that, with the prospect of a permanent army of unemployed, the Negro will consider himself fortunate if he can retain his unskilled job. Already whites are taking away the more desirable unskilled jobs. It is commonly acknowledged that the Negroes are proportionately more affected by the unemployment crisis than the whites. Thus, the Negro, having entered industry when it has ceased to expand, will find the opportunities for advancing up the

rungs of the industrial ladder extremely limited. Indeed, many are destined to be pushed off completely and to become once more a labor reserve.

The authors effectively annihilate the myth that the Negro has fought his way into industry by acting as a strike-breaker. They demonstrate conclusively that only a small proportion of Negro workers entered industry through this precarious route.

The employers have generally welcomed the Negro, although the authors have come across many instances of discrimination. However, "as in the South, the North tries to perpetuate the tradition of black men's and white men's jobs." And notwithstanding the fact that during slavery and considerably thereafter the skilled Negro workers predominated in the South, the erroneous notion still prevails that he is only fit for the cruder work. While there is wage-rate discrimination between whites and blacks in the South, there is little of that in the North. Usually the Negro worker receives the same pay as the white worker for the same work. But many employers who employ disproportionately large numbers of Negroes pay a lower wage-rate to all their workers than in similar plants where white workers predominate. These firms are, however, the exceptions. In fact, large employers prefer not to have too large a group of workers from any one nationality or race. Consequently the Negro is used "as one of the racial and national elements which help to break the homogeneity of their labor force."

In contrast to the welcome displayed by the employers toward the Negro, the attitude of American unions has been either indifferent or hostile. This attitude the authors trace to the insular outlook of American unions induced by their monopolistic job psychology. American unions also exclude white men. The only difference is that "exclusion of white men is due largely to the psychology of craft unionism while that of the Negro is due to an interplay of craft union psychology with the psychology of race prejudice." Many unions bar Negroes by specific provisions in the constitution or the ritual. Most of the unions just keep them out without bothering about formal and written authority.

The American Federation of Labor, as the spiritual head of the trade-union movement, at first attempted to induce its affiliated unions to cease drawing the color line. Failing in that undertaking, it turned its attention to organizing Negro workers into separate local unions. "The adoption of this policy was the Federation's tacit admission of

its impotence in the face of trade autonomy, craft separatism, and exclusiveness." But the authors conclude that "the organization of the great body of Negroes, the unskilled, had never been seriously undertaken by the American Federation of Labor, its declarations of good will to the contrary notwithstanding."

This dark picture has a few light touches. There are a few unions that not only welcome the Negro but have gone out of their way to solicit his adherence. And most of these unions are affiliated with the Federation. However, they are the more modern type, that is, industrial in form and radical in ideology. These are also the unions that have been highly successful among the semiskilled and unskilled workers. Among them are the so-called Jewish garment trade-unions, the miners' union, and the Industrial Workers of the World.

The Negroes have made many attempts dating back to post–Civil War days to organize independently. These attempts were of a sporadic nature until the last post-war period with its influx of large numbers of Negroes into industry. Since then the attempts have been widespread. But "the only independent Negro unions which have really been effective have been those in occupations in which the personnel has been predominantly or entirely colored." As the situation stands at present, only 4.3 per cent of the Negro workers are in unions, whereas over 12 per cent of all the workers are organized.

Naturally, the Negro community has interested itself in the predicament of the Negro worker. There are those who take the position that the Negro must break his way into industry even by strike-breaking if necessary, and has more to gain by catering to the employer than by seeking the aid of unions. There are extreme radicals who would have the Negro seek salvation by aligning himself with the revolutionary labor forces. And in between there are the moderate elements that counsel the Negro worker to join existing unions where he can or to organize independent unions if need be, and always to bear in mind that he is destined to remain a worker during his natural life. As far as the Negro workers are concerned, the great majority seem suspicious of unions, and particularly American Federation of Labor unions.

This is a scholarly and readable book, and will undoubtedly become the authoritative book on the subject. Economists will be pleased to note that *The Black Worker* is fittingly dedicated to the late Professor Henry Rogers Seager.

DAVID J. SAPOSS

BROOKWOOD
KATONAH, N.Y.

Value and Income. By ARTHUR ELI MONROE. Cambridge: Harvard University Press, 1931. Pp. viii+286. $3.50.

In Professor Monroe's words, he is offering "a book expounding 'pure theory' in the abstract deductive manner" (p. v). He hastens to add that he hopes to gain by "tempering the absolutism of theory with the realism of the Historians" (p. v), but evidences of such "tempering," greater than are to be found in comparable theoretical treatises, do not materialize. The title, Preface, and chapter i hold some promise that here at last is a work that will meet the need for a systematic synthesis of post-Marshallian contributions to neo-classical theory; chapter ii serves to dissipate this hope, however, and it is not revived by succeeding chapters. The author follows beaten paths in his treatment of many points, yet *Value and Income* is, on the whole, characterized by a strong flavor of novelty.

Professor Monroe seeks to avoid the dichotomous attack on the pricing problem that has been the *modus operandi* of many theorists, and, instead, to encompass both value and distribution in a unitary analysis. ". . . . the only way to get at the real meaning of the value system is to analyze step by step the mutual and cumulative interactions between it and the distributive system by which it has been attained" (p. 260). That he has made an earnest effort is freely admitted, but it is hard to see at what point he has carried this difficult process of integration farther than have Marshall, F. M. Taylor, Cassel, and others.

Striking and novel uses of terms and methods of analysis are encountered at many points in the argument. "Perfect" competition is said to prevail when "every seller has one unit to dispose of and no more" (p. 95). Much is made of a distinction between "scarce" and "co-operating" labor, but this idea is not applied to other factors of production in such a way as to eventuate in the formulation of categories comparable to "price determined" and "price determining." "It is necessary to 'build up' the law of rent piecemeal" (p. 154), yet the treatment of rent is essentially Ricardian in character. The term "savings" is used exclusively—the more common "capital" not even appearing in the Index. Interest is explained by a pluralistic theory. No less than seven sources of interest are enumerated, but these are later boiled down to two—"scarcity-reducing investments" and "efficiency-increasing investments." Demand is enthroned as "the proximate determinant of market prices" (p. 262). Probably the author's most

heretical stand is that "cost of production, in the proper sense of the term, is no such dominating factor in the determination of value as it has often been pictured" (p. 57). Having thus cleared the way, he introduces his own pluralistic theory, that "the determinants of long-run value may be conveniently grouped under four heads, (1) the objective factor in costs, (2) the relative scarcity of the factors or particular variety of factors used, (3) the size of the output under equilibrium, and (4) the special burdens incident to the use of a productive factor for a particular purpose" (p. 264).

The volume is well sprinkled with evident contradictions. It is stated (p. 150) that "whatever represses leisure and luxurious consumption . . . . tends to depress wages in some degree," and a few pages later that "growth of population . . . . puts landowners in a position to increase their consumption of luxuries . . . . thus increasing the pressure on the land to the disadvantage of labor's share of the product" (p. 153). Both rent and interest are designated as deductions from "the total output of industry," but the share of labor is later referred to as "what the other claimants are not able to appropriate under the conditions assumed" (p. 132). No mention is made of the productivity theory of distribution, yet it is stated that "the earnings of every factor of production can be explained only in terms of the effect upon values, in the long run, of the introduction of that factor" (p. 260), and many other passages relating to the determination of the distributive shares are thoroughly compatible with the productivity theory. In connection with an attempt to dispose of the concept of consumer's surplus, it is said that "if a man is willing to pay ten dollars for one unit and four dollars for a second . . . . we must interpret these facts as meaning that he would be willing to buy two units at seven dollars each" (p. 21). Now surely it is patently absurd to argue that a housewife who would part with one hundred and eighty-five dollars to obtain one washing machine, and who would give only fifteen dollars for a second, would buy two machines if the market price were one hundred dollars!

One is somewhat amazed at the many aspects of the pricing problem that are omitted from serious consideration. No mention is made of increasing costs, although decreasing costs receive detailed attention. The supply side of the picture is allowed to remain almost wholly unilluminated. The discussion of diminishing returns on land follows orthodox lines, but no cognizance is taken of the significance of diminishing returns in connection with the broader aspects of distribution,

nor is an effort made to formulate any comprehensive principle relating to diminishing productivity in general. Only incidental mention is made of cyclical phenomena. The relationship between wages and population growth is disposed of without any reference being made to such inductive evidence as differential birth-rates among income classes. Graphical methods of presentation and statistical data are eschewed altogether.

Many portions of *Value and Income* are worthy of praise. The transitory, experimental character of individuals' tastes and wants is properly emphasized. The fallacious notion that the supply of labor is a positive function of the rate of wages is disposed of effectively. The discussion of the relationship between the interest rate and the volume of savings is penetrating and reasoned. An able defense is offered for the position that land is a "produced" factor, and that its supply is readily varied. The reasoning with respect to detailed points is generally clear and incisive.

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